RHEUMATOLOGY and MUSCULOSKELETAL SYSTEM:

1. A 42 years old male presented with sudden onset of left knee pain associated with swelling and decrease range of motion in the left knee. Examination showed hot and tender left knee with swelling. What should be the best initial management for him?
   - A. CRP level
   - B. Serum uric acid
   - C. X-ray left knee
   - D. Joint aspiration ✓
   - E. Ultrasound knee

Ans: Joint Aspiration

Explanation: This patient presented with acute monoarthritis and the best initial management in acute monoarthritis is joint aspiration and gram stain, culture, chemical analysis and microscopy for crystals in the aspirated fluid. The three important differentials for acute monoarthritis are septic arthritis, gout and pseudogout. All other tests can also be performed but the best initial is joint aspiration.

2. A 35 year old male presented with history of pain and tenderness in multiple joints for 3 months. He also complains of early morning stiffness. Symmetrical joints are involved and both the small and large joints of upper and lower limbs are involved with sparing of distal interphalangeal joints. Which of the following is the most probable diagnosis?
   - A. Osteoarthritis
   - B. Psoriatic arthritis
   - C. Rheumatoid arthritis ✓
   - D. Systemic lupus erythematous
   - E. Viral arthritis

[illegible]
[illegible]
[illegible]

Ans: Rheumatoid arthritis

Explanation: All of the above are the causes of polyarthritis. RA is typically causes symmetrical, small and large joints arthritis involving both upper and lower limbs with sparing of DIP joints. Viral arthritis only involves small joints and it is self-limited within 8 weeks. OA also involves DIP joints. Patient is also young. Psoriatic arthritis causes asymmetrical arthritis and also involves DIP joints. SLE also typically involves small joints with no synovitis.

8-12

3. A 61 year old obese female presented with history of multiple joints pain more in lower limbs for 2 years which is progressively worsening. She also complains of early morning stiffness which lasts for 10-15 minutes. Examination showed palpable coarse crepitus on passive movements at knee joints. What is the most probable diagnosis?
   - A. Rheumatoid arthritis
   - B. Chronic tophecous gout
   - C. Osteoarthritis
   - D. Psoriatic arthritis
   - E. Systemic lupus erythematous

[illegible] [illegible] 5 7

NO [illegible] 5

NO ~~80~~

400

Ans: Osteoarthritis

Explanation: This middle aged obese lady has typical signs and symptoms of osteoarthritis. The typical symptoms are insidious onset of pain over months to years with variable intensity over time (good days, bad days) mainly related to movements at weight bearing joints. Pain gets better with rest. Pain is associated with < 15 minutes morning stiffness and < 5 minutes gelling phenomena after rest. Typical signs are restricted movements, palpable and something audible coarse crepitus due to rough articular surfaces, bony swelling (Heberden's and Bouchard node), joint line or periarticular tenderness with mild or no synovitis.

4. Which of the following is the characteristics feature of generalized nodal osteoarthritis?
   - A. Peak onset in old age
   - B. Poor functional outcomes for hands
   - C. Involvement of 1st carpometacarpal joint ✓
   - D. Male preponderance
   - E. No genetic predisposition

Ans: Involvement of 1st carpometacarpal joint

Explanation: Typical characteristics feature of generalized nodal osteoarthritis are:

- Marked female preponderance
- Peak onset in middle age(40)
- Polyarticular finger interphalangeal joints OA
- Heberden's and Bouchard nodes
- Involvement of 1st carpometacarpal joint
- Good functional outcomes for hands
- Predisposition to knee OA
- Strong genetic predisposition

5. Which of the following clinical condition is associated with rapid radiographic and clinical progression of knee osteoarthritis?
   - A. Calcium deficiency
   - B. Vitamin D deficiency ↓Ca+, ↓PO4, ↑ALP
   - C. Pseudogout
   - D. Acute gout
   - E. Osteoporosis

pseudo Ca+

Ans: Pseudogout

Explanation: Calcium pyrophosphate dihydrate (CPPD) crystal deposition in association with osteoarthritis is most common at the knee. This may result in a more overt inflammatory component (stiffness, effusion) and superadded acute attacks of synovitis (pseudogout) which may predict more rapid radiographic and clinical progression.

6. A 52 year old female presented with history of pain and swelling in both knee joints for 4 years. She is taking paracetamol, naproxen and tramadol with little improvement in pain. On examination, patient has coarse crepitus during active and passive movements at both knee. Which of the following is the next best management step?
   - A. Colchicine

B. Intraarticular hyaluronate
C. Alendronate
D. Intraarticular triamcinolone
E. Chondroitin sulphate

Ans: Intraarticular triamcinolone

Explanation: This patient is having Osteoarthritis which is not responding to the initial treatment with NSAIDS and tramadol. Intraarticular steroid injection is strongly recommended for patients with knee OA not responding to NSAIDs by American college of rheumatology guidelines. Intraarticular hyaluronic acid is not recommended in the guidelines. Glucosamine and chondroitin sulphate is not recommended in knee and hip OA but conditionally recommended in hand OA. Colchicine, fish oil, vitamin D, bisphosphonate, HCQ, methotrexate, prolotherapy, TNF inhibitors and IL-1 inhibitors are not recommended in the management of OA.

7. Which of the following is the most common site involved in osteoarthritis?
   A. Hip
   B. Knee
   C. Hand
   D. Cervical spine
   E. Ankle

Ans: Knee

Explanation: Joints involved in OA are knee> hand> hip> lumber spine> cervical spine

8. A 57 year old female presented with gradual onset right knee pain associated with mild swelling and several episodes of the knee giving away. Examination showed mild crepitus and medial joint line tenderness. There is no history of trauma. ESR and CRP are normal. X-ray shows moderate OA in the medial tibio- femoral and patello- femoral compartment. What should be the most appropriate single intervention for her?
   A. Artroscopy with washout
   B. Intraarticular triamcinolone
   C. Oral naproxen
   D. Physiotherapy for strengthening
   E. Glucosamine and chondroitin sulphate

LOST
LOS

Ans: Physiotherapy for strengthening

Explanation: Physiotherapy has good evidence for the treatment of knee osteoarthritis, and in the context of instability, strengthening exercises are key in the management. Arthroscopy is only indicated in the presence of locking, or if symptomatic meniscal tears/ cruciate ligament damage is suspected. There is no role of intra articular corticosteroid injection and NSAIDs in the management of such patients.

9. A 37 year old male presented with progressively worsening right knee pain which gets worse with going upstairs and rising from sitting position. Examination showed unstable looking right knee with no give way or locking, mild tenderness and mild swelling below the medial joint line. A valgus strain of his unlocked knee reproduces the pain. What is the most likely origin of his symptoms?

A. Anserine Bursitis
B. Knee osteoarthritis
C. Meniscal tear
D. Medial collateral ligament strain
E. Pre patellar Bursitis

Ans: Medial collateral ligament strain

Explanation: The valgus strain test strongly suggests strain of the medial collateral ligament or enthesopathy of the inferior insertion of the ligament. Anserine bursitis causes pain of upper medial tibia with tenderness over upper medial tibia. Meniscal tear is associated with locking phenomena. OA is less likely in a young patient with no history of trauma. Pre patellar bursitis causes anterior patella pain with tender and fluctuant swelling in front of the patella.

10. Which of the following clinical characteristics is more suggestive of non-articular problem rather than articular problem?

A. Deep and diffuse pain
B. Limited movements on passive movements
C. Joint effusion
D. Pain on active movements but not on passive movements
E. Deformity and instability

Ans: Pain on active movements but not on passive movements

Explanation: Distinguishing between articular and non- articular conditions require careful and detailed examination. Articular structures including synovium, synovial fluid, articular cartilage, intra articular ligaments, joint capsule and juxtaarticular bone. Non-articular or periarticular structures include supportive extraarticular ligaments, tendons, bursae, muscles, fascia, bone, nerve, and overlying skin. Articular disorders are characterized by deep or diffuse pain, pain or limited range of motion on active and passive movements, effusions causing swelling, bony enlargement, crepitation, instability, locking and deformity. By contrast, periarticular disorders tend to be painful on active but not passive or assisted range of motion. They often demonstrate point or focal tenderness in regions adjacent to articular structures, are elicited with a specific moment or position, and have physical findings-remote from the joint capsule.

11. Which of the following is the characteristics feature of non-inflammatory rheumatic disorder rather than inflammatory disorders?

A. Morning stiffness
B. High ESR and CRP
C. Systemic symptoms
D. Low grade Fever
E. Daytime Gel phenomena

50
30
2000
PMN
75

Ans: Daytime gel phenomena

Explanation: Rheumatological disorders are divided into inflammatory and non-inflammatory disorders.

- Inflammatory disorders: Signs of inflammation (erythema, warmth, pain, swelling), systemic symptoms (fatigue, fever, rash, weight loss), Laboratory evidence of inflammation (high ESR, CRP and Platelets, anemia of chronic disease, hypoalbuminemia), prolonged early morning stiffness which gets improved with activity.
- Non inflammatory disorders: Pain without swelling or warmth, absence of inflammatory or systemic features and daytime gel phenomena which is exacerbated by activity.

12. A 32 old male who is working as a clerk presented with pain in his upper forearm during writing. On examination, he has elbow pain with wrist dorsiflexion and middle finger extension. There is no weakness. What is the most likely diagnosis?
    A. Osteoarthritis
    B. Olecranon bursitis
    C. Carpal tunnel syndrome
    D. [✓ Tennis elbow]
    E. Golfer's elbow

Ans: Tennis elbow

Explanation: Tennis elbow or lateral epicondylitis is a repetitive strain injury of the extensor muscles of the forearm which insert at the lateral epicondyle of the elbow. Typically this causes pain at the lateral epicondyle area which is exacerbated by gripping small objects and gripping motions such as writing. On examination, passive extension of the wrist with the elbow in full extension reproduces the pain. Pain can also be brought on by middle finger extension.

13. A 35 year old male presented with complaints of acute severe pain in right knee associated with swelling. Examination showed pain on active and passive movements. Aspiration of fluid is done which showed 20,000 WBCs with 80% neutrophils and brightly negative birefringent crystals. What is the diagnosis?
    A. Acute septic arthritis
    B. Acute pseudogout
    C. Acute gout
    D. Palindromic rheumatism
    E. Psoriatic arthritis

2000 30,00- 80,

Ans: Acute gout

Explanation: This young male patient presented with acute monoarthritis of knee. The first investigation should be joint fluid aspiration. Total cell count is more than 2000 which suggests inflammatory or septic arthritis. The next step should be to check the %age of neutrophils. If PMN > 75%, check for crystals. If crystals absent => septic Arthritis. If present=> polarized light microscopy. Negative birefringence=> Gout. Positive birefringence => pseudogout.

14. A 40 year old male presented with complaints of sudden onset of excruciating pain in left 1st tarsometatarsal joint after a lavish dinner. Joint fluid showed negatively birefringent crystals. What is the best initial treatment for him?
    A. Colchicine

B. Naproxen
C. Prednisone
D. Febuxostat
E. Allopurinol

Ans: Naproxen

Explanation: This patient is having acute gouty arthritis. The drug of choice is NSAIDs. Naproxen is commonly used NSAIDs. Colchicine and Steroids can also be used for acute attack if NSAIDs are contraindicated or poorly tolerated. Urate lowering drugs should be avoided in acute attack and should be started atleast 2-4 weeks of acute gout under the cover of NSAIDs or colchicine to prevent flare.

15. A 27 year old athlete presented with sudden onset of pain in his big toe after a 10 km marathon race. His serum uric acid is 5.5 mg. What is the most probable diagnosis?
    A. Rheumatoid arthritis
    B. Acute gouty arthritis
    C. Acute pseudogout
    D. Trauma
    E. Reiter syndrome

1 90-120
2 60-90
3 30-60
4 15-30
<15
1.

Ans: Acute gouty arthritis

Explanation: Dehydration is a risk factor for developing acute gout. Serum uric acid level can be normal in acute gout.

40/2.
100-200
regular

16. A 55 year old diabetic patient with history of stage 4 diabetic kidney disease presented with acute gouty arthritis of left knee joint. Which of the following is the best management for him?
    A. Naproxen
    B. Colchicine
    C. Oral prednisone ×
    D. Intraarticular triamcinolone
    E. Allopurinol ×

diabetic
CKD.
50ml/min 50.
10ml/min stop

Ans: Intraarticular triamcinolone

Explanation: This patient is diabetic which rules out oral steroid as the best treatment because steroid will worsen his diabetic control. As patient is having stage 4 CKD, NSAIDs and colchicine are also contraindicated. Allopurinol should also be avoided in acute gout. The best treatment in this patient should be an intraarticular steroid injection. For a single joint, or a few involved joints, intraarticular triamcinolone or methylprednisolone is the best treatment.

17. A 60 year old man presented with progressive pain in his hands. Labs were done which showed high CRP with negative RA factor. XRAY of the hands is done which showed well defined erosions with sclerotic margins with relatively preserved joint spaces and soft tissue masses. What is the most likely diagnosis?
    A. Acromegaly
    B. Rheumatoid arthritis ✓
    C. Osteoarthritis

methyl
[illegible]

D. Chronic tophaceous gout
E. Primary hyperparathyroidism

Ans: Chronic tophaceous gout

Explanation: Characteristic radiographic features of advanced chronic tophaceous gout include cystic changes, well defined erosions with sclerotic margins often with overhanging bony edges and soft tissue masses. After many acute mono- or oligo articular attacks, a proportion of gouty patients present with a chronic non symmetric synovitis causing potential confusion with rheumatoid arthritis. The x-ray findings are typical of gouty arthritis.

18. A 55 year old man presented with acute flare of chronic tophaceous gout with pain and swelling of multiple joints of both hands. Patient has history of an upper GI bleed due to duodenal ulcer 2 months back. He was taking colchicine but developed diarrhea after that. Which of the following is the best treatment for him?
    A. Intraarticular triamcinolone
    B. Naproxen
    C. Allopurinol
    D. Febuxostat
    E. Oral prednisone

Ans: Oral prednisone

Explanation: Naproxen is contraindicated in a patient with history of duodenal ulcer. Febuxostat and allopurinol should also be avoided in acute attack. As patient is having polyarthritis, oral or IM steroid for short term is the best management in this patient.

(As hyperurecemia is also a feature of metabolic syndrome, the treatment should be individualized in every patient and contraindication for different drugs should be kept in mind)

Drug of choice => NSAIDs

Colchicine => if NSAIDs contraindicated due to gastric or duodenal ulcer.

Drug of choice in CKD => oral prednisone if polyarthritis. Intraarticular triamcinolone if mono or oligoarticular Arthritis. [illegible]

Diabetic with CKD => Intraarticular triamcinolone

Hypertension with hyperurecemia => losartan for hypertension. Also has uricosuric effect.

19. Which of the following is the most common cause of hyperurecemia?
    A. Lesch- Nyhan syndrome
    B. Increased intake in diet
    C. High fructose intake
    D. Diminished renal excretion
    E. Diminished GI excretion

Diabetes
CKD
~~[illegible]~~

Ans: Diminished renal excretion

Explanation: In over 90% of patients with hyperurecemia, the main abnormality is reduced uric acid excretion by the renal tubules which are responsible for over 2/3rd elimination. The remaining 1/3rd is excreted by GIT.

20. Which of the following is not an indication of urate lowering therapy in patients with hyperurecemia?
    - A. Three attacks of gout in a year
    - B. Renal impairment
    - C. [✓ Uric acid 08 mg with no symptoms]
    - D. Uric acid stones
    - E. Tophaceous gout

Ans: Uric acid 08 mg with no symptoms

Explanation: Asymptomatic hyperurecemia is defined as uric acid >7 mg/dl in the absence of signs and symptoms of monosodium urate crystal deposition disease. Guidelines do not recommend urate lowering therapy in asymptomatic hyperurecemia until uric acid is > 14. Japanese guidelines although recommend to treat when uric acid is > 8 mg/dl.

21. A 53 year old patient with diabetes mellitus, hypertension, hyperlipidemia, ischemic heart disease and CKD has high uric acid level on routine follow up testing. Which of the following drug is associated with worsening of hyperurecemia in this patient?
    - A. Canagliflozin
    - B. Losartan
    - C. [✓ Aspirin low dose]
    - D. Fenofibrate
    - E. Sevelamer

low dose Aspirin

Ans: Aspirin low dose

Explanation: Low dose aspirin with doses up to 1-2g/day reduces urea and uric acid excretion, contributing to hyperuricemia. Higher doses of Aspirin are uricosuric. All of the other drugs have indirect urate lowering effects and can be used if high uric acid is associated with the other conditions for which these medications are indicated.

22. A patient with history of uric acid stones has serum uric acid of 9.5mg/dl. He is started on allopurinol 100 mg once daily. What should be the minimum target of uric acid in this patient?
    - A. < 4 mg/dl
    - B. < 5 mg/dl
    - C. < 6 mg/dl
    - D. < 7 mg/dl
    - E. < 3mg/dl

Ans: < 6mg/dl

Explanation: A target serum level of <6 mg/dl promotes gradual dissolution of MSU crystals. The guidelines recommend that minimum serum urate target should be <6mg/dl. Level of < 5 is sometimes needed to improve gout signs and symptoms. Serum uric acid should be measured every 2-5 weeks during titration and when < 6, measurement every 6 monthly.

23. A 70 year old female who is recovering from an abdominal paraumbilical hernia surgery complaints of sudden onset of right knee pain associated with swelling. Examination showed a warm and tender joint. Diagnostic fluid aspiration is done which showed WBC of 15000 with 90% neutrophils and negative gram stain. Polarized microscopy showed rhomboid shaped crystals with absent birefringence. What is the most likely diagnosis?

A. Acute gout
B. Acute septic arthritis
75/ C. Acute pseudogout
D. Palindromic rheumatism
E. Psoriatic arthritis

Ans: Acute pseudogout

Explanation: Monoarthritis after surgery=> inflammatory joint fluid with high neutrophils and negative gram stain and rhomboid shaped crystals with no birefringence suggest pseudogout as the cause. Calcium pyrophosphate dihydrate crystals are typically rhomboid shaped rod like structures that exhibit weakly positive or no birefringence in contrast to intensely negative birefringent needle shaped MSU crystals.

24. Which of the following electrolyte abnormality is a risk factor for chondrocalcinosis?

A. Hypermagnesemia
B. [✓ Hyperphosphatemia]
C. Hypophosphatemia
D. Hypokalemia
E. Hypernatremia

Ans: Hypophosphatemia

Explanation: Hypophosphatemia, hypomagnesaemia and hypercalcemia associated with hyperparathyroidism are risk factors for developing chondrocalcinosis. Other risk factors are OA, hemochromatosis, Wilson disease and pamidronate therapy for hypercalcemia.

25. A 57 year old male with a diagnosis of hereditary hemochromatosis on twice monthly venesection presented with pain in both hands, wrist and knees. You ordered x-ray of both hands. Which of the following radiological features is associated with the arthritis of hemochromatosis?

A. [✓ Hook like osteophytes]
B. Juxtaarticular osteopenia
C. Periostitis
D. Punched out lytic lesion
E. Acroosteolysis

Ans: Hook like osteophytes

Explanation: The arthropathy of hemochromatosis targets metacarpophalangeal joints, radiocarpal joint, hips, knees, ankles and rarely elbows and shoulders. Chondrocalcinosis is frequent. The arthropathy of hemochromatosis superficially resembles osteoarthritis with joint space narrowing, sclerosis, osteophytosis and cysts. Erosions have been reported. Hook like osteophytes in metacarpophalangeal joints occurs on the radial aspect of the metacarpal head are regarded as a characteristic of the arthropathy of hemochromatosis. ***The 2nd and 3rd MCP joints of both hands*** are often the 1st and most prominent joints affected in HH. Juxtaarticular osteopenia occurs in RA. Acro-osteolysis refers to resorption of the distal phalanx. Common causes of acro-osteolysis are scleroderma, Raynaud's disease, psoriatic arthritis, hyperparathyroidism, sarcoidosis and dermatomyositis. Periostitis also called as periosteal reaction is a non-specific radiographic feature that indicates periosteal irritation. There are many causes of this. Causes of lytic bone lesions are myeloma, metastasis, fibrous dysplasia, giant cell tumor, osteoblastoma, hyperparathyroidism, osteomyelitis, and bone infarction.

26. A 45 year old female presented with complaints of pain in small joints of hands for 6 months. She had an x-ray of both hands which showed periarticular erosions, subluxation and loss of joint space involving MCP and PIP joints. ESR and CRP are high. What is the diagnosis?

    A. Osteoarthritis
    B. Primary hyperparathyroidism
    C. Psoriatic arthritis
    D. Systemic lupus erythematous
    E. Rheumatoid arthritis

Ans: Rheumatoid arthritis

Explanation: History of small joints pain for 6 months with typical x-ray findings of periarticular erosions and subluxation and high inflammatory markers points towards the diagnosis of rheumatoid arthritis. SLE does not cause synovitis and erosions. Psoriatic arthritis involves DIP. Osteoarthritis and primary hyperparathyroidism does not cause high inflammatory markers and erosions.

ACR/EULAR diagnostic criteria for RA:

Table I: 2010 ACR/EULAR Classification Criteria for RA

Joint Involvement	Score
1 large joint	0
1-10 large joints	1
1-3 small joints	2
4-10 small joints	3
> 10 joints	5
Serology	
Negative RF and negative ACPA	0
Low-positive RF and low-positive ACPA	2
High-positive RF or high-positive ACPA	3
Acute-phase reactants	
Normal CRP and normal ESR	0
Abnormal CRP or abnormal ESR	1
Duration of symptoms	
< 6 weeks	0
> 6 weeks	1

A patient with score of > 6 is classified as having rheumatoid arthritis (RA).
ACR is the American College of Rheumatology
EULAR is the European League Against Rheumatism
ACPA is anti-citrulliated protein antibody
CRP is C-reactive protein
ESR is erythrocyte sedimentation rate

27. A 38 year old female presented with pain and swelling in her fingers of both hands and wrists for 5 months worsened over the last 2 months. Examination showed symmetrical swelling of the proximal interphalangeal joints in both hands along with erythema and swelling. Labs were done which showed Hb 12.1, ESR 65 mm/hr, CRP 45, RA factor negative and anti CCP negative. What is the most likely diagnosis?
    - A. Psoriatic arthritis
    - B. Reiter syndrome
    - C. Rheumatoid arthritis

D. Systemic lupus erythematous
E. Osteoarthritis

Ans: Rheumatoid arthritis

Explanation: If we apply the ACR/EULAR criteria for the diagnosis of RA, this patient has a score of 5+1+1(more than 10 joints involved+ raised CRP or ESR+ duration > 6 weeks)=7. A score of 6 shows definite rheumatoid arthritis. RA factor is an antibody which is typically IgM against the body's own IgG. It is present in 70- 75% of patients with rheumatoid arthritis. If a patient has RA and or RA factor negative, they have seronegative arthritis. Anti CCP is ~~only positive~~ in 65-70% of patients with RA. It is more specific than RA factor for rheumatoid arthritis.

70%

28. A 39 year old male presented with pain and swelling of small joints of hands is diagnosed as a case of rheumatoid arthritis. Which of the following is the initial long-term drug of choice for him?

A. Long term celecoxib
B. Low dose Steroid
C. Methotrexate ✓
D. Infliximab
E. Hydoxychloroquine

Ans: Methotrexate

Explanation: Methotrexate is the preferred DMARD, unless contraindicated, and should be first-line treatment for rheumatoid arthritis. Patients should be started on DMARDs as early as possible (ideally within 3 months), even if they do not fulfill classification criteria for an inflammatory rheumatologic disease. NSAIDS are not recommended for long term use. Steroids are only used for initial 4-6 weeks and not used for long term. Treatment should be aimed at reaching a target of sustained remission or low disease activity in every patient.

29. A 25 year old female is diagnosed as a case of sero-positive RA. She is married and wants to start family soon. Which of the following treatment option you would consider in this patient?

A. Methotrexate
B. Leflonamide H2 [illegible]
C. Sulphasalazine HCQ
D. Infliximab
E. Naproxen

Ans: Sulphasalazine

Explanation: For young female patients who want to strat family in the near future, methotrexate and leflonamide should be avoided because of the risk of teratogenic effects on fetus. Methotrexate, a folic acid antagonist, is contraindicated in pregnancy, because it is an abortifacient and has teratogenic effects, such as causing the development of craniofacial abnormalities, limb defects, and such CNS defects as anencephaly, hydrocephaly, and meningomyelopathy, especially with first-trimester exposure. Because its active metabolites have a long half-life, methotrexate must be discontinued at least 3 months before conception; compensatory treatment with folic acid should be continued during that period and throughout pregnancy. Male partners should also discontinue methotrexate at least 3 months prior to attempting to conceive. Leflonamide, a pyrimidine synthesis inhibitor, is also a category X medication; it is extremely teratogenic and is absolutely contraindicated in pregnancy. Its half-life is 14-15 days, but the active metabolite undergoes extensive enterohepatic circulation; thus, the drug takes up to 2 years to be undetectable in plasma. Consequently, discontinuation of the drug before conception is insufficient. The drug needs to be eliminated with administration of cholestyramine (8 g TID for 11 d). Plasma levels of less than 0.02 mg/L should be verified with 2 separate tests at least 2 weeks apart. If unacceptably high levels persist, additional cholestyramine may be given. Sulfasalazine, a dihydrofolate reductase inhibitor, is a category B medication; it does not increase fetal morbidity or mortality and is considered safe in pregnancy. It can be used 1st line DMARD in young patients who wants to start family soon.

30. A 36 year old female diagnosed case of RA on methotrexate and HCQ with folic acid presented with painful mouth ulcers. Labs were done which are normal. What should be done?
    - A. IV steroids
    - B. Stop HCQ
    - C. Stop methotrexate
    - D. Stop methotrexate give and folinic acid
    - E. Increase the dose of folic acid

Ans: Stop methotrexate and give folinic acid

Explanation: Guidelines recommend that if patient on methotrexate develops oral ulceration and mucositis, stop methotrexate initially, give folinic acid and discuss with rheumatologist. Also check the history that if patient has mistakenly taken daily methotrexate instead of weekly because weekly methotrexate has less risk of mucositis.

31. A 36 year old female is a diagnosed case of RA on methotrexate presented with burning micturition. She is diagnosed as having acute cystitis. Which of the following antibiotics should be avoided in this patient?
    - A. Ciprofloxacin
    - B. Cefixime
    - C. Co-amoxiclav
    - D. Co-trimaxazole
    - E. Fosfomycin

Ans: Co-trimaxazole

Explanation: Like methotrexate, Co-trimaxazole is an inhibitor of folic acid metabolism and can cause bone marrow suppression. Trimethoprim-sulfamethoxazole is also known to decrease the renal excretion of methotrexate. When used in combination, the potential for toxicity is substantial. It can leads to life threatening toxicity, so Co-trimaxazole should be avoided in patients taking methotrexate.

32. A 30 year old female presented with a six months history of pain and swelling in her hands. Blood tests were done which showed high positive RA factor and anti CCP with high titer ANA level. Which drug regimen should be started initially?
    - A. Methotrexate+ prednisone
    - B. Methotrexate alone
    - C. Methotrexate+ Sulphasalazine
    - D. Sulphasalazine+ prednisone

E. Sulphasalazine alone

Ans: Methotrexate + prednisone

Explanation: This patient has sero-positive RA. This patient should be started on DMARD therapy as early as possible. Given the young age of the patient, one can be confused between giving methotrexate and sulphasalazine, but positive ANA make sulphasalazine as a poor choice because in patients who are ANA positive, they are at high risk of side effects of sulphasalazine. Often it manifests as Steven Johnson like reaction with rash, oral ulceration and systemic toxicity. So in this patient, initial treatment should be methotrexate weekly with short term 6-8 week's prednisone therapy. HCQ can also be added.

=>Always check ANA level before prescribing sulphasalazine in RA.

33. A 48 years old patient with history of RA for 15 years presented with complaints of ptosis and diplopia on and off more at evening time for 1 month. She also complains of difficulty in combing her hair and climbing stairs for 2 months. She was started on some new DMARD 3 months back. Which of the following is the most likely cause of her symptoms?
    - A. Methotrexate
    - B. Leflonamide
    - C. Infliximab
    - D. Penicillamine
    - E. Sulphasalazine

Penc

D

Ans: Penicillamine

Explanation: This patient has developed signs and symptoms of Myasthenia Gravis. Penicillamine is associated with development of new onset myasthenia gravis like symptoms and worsening of diagnosed MG. Symptoms get better after stopping Penicillamine.

34. A 41 year old RA patient on 15mg/ week dose of methotrexate came for monthly blood tests which showed ALT of 65(N 35-40). What should be the correct course of action for this patient?
    - A. Stop methotrexate
    - B. Reduce dose to 10mg
    - C. Switch to sulphasalazine
    - D. Continue with same dose
    - E. Urgent liver ultrasound

3month

Ans: Continue with same dose

Explanation: Methotrexate can cause acute elevation of liver transaminases. LFTs need to be regularly monitored. LFTs should be measured before starting methotrexate and repeated weekly until therapy stabilized and then monthly to 2 monthly. There is no need to stop methotrexate unless the ALT or AST doubles. The patient should continue the same dose and LFTS should be repeated after 1 month.

35. A 59 year old female with history of long standing rheumatoid arthritis with multiple flares presented with left hip and groin pain. It is very painful to bear weight on left side and she has an antalgic gait. X-ray of left hip is normal. Which of the following is the next best step?
    - A. X-ray of left knee
    - B. Start prednisone

C. Check CRP level
D. MRI of left hip
E. Artroscopy of left hip

Ans: MRI of left hip

Explanation: This patient with history of long standing RA with multiple flares which suggest steroids use is presented with acute left hip and groin pain with inability to put weight. This history suggests the possibility of avascular necrosis of the femoral head. Both RA and steroids are a risk factor for this problem. MRI should be done if it is suspected when the x-ray is normal. Avascular necrosis of the hip is more common than other sites, presumably due to a combination of precarious blood supply and high loading when standing. MRI is the most sensitive modality, with a sensitivity of 71-100% and specificity of 94-100%, for diagnosis. T2 imaging shows a hyperintense inner line between normal marrow and ischaemic marrow. This appearance is highly specific for AVN hip and known as "double line sign".

36. A patient has developed nephrotic syndrome and a renal biopsy is performed which showed deposits in the mesangium and capillaries which stain pink with Congo red and appears as green birefringence under polarized light. What is the likely underlying diagnosis?
A. Membranoprolifrative GN
B. Rheumatoid arthritis
C. IgA nephropathy
D. Penicillamine therapy
E. HIV associated Nephropathy

Ans: Rheumatoid arthritis

Explanation: Renal biopsy findings are typical of amyloidosis and from the above options, Rheumatoid arthritis can lead to secondary amyloidosis.

Causes of nephrotic syndrome in RA:

- Amyloidosis due to long standing RA
- Pencillamine and gold salt associated membranous nephropathy
- NSAIDS induced minimal change disease

RA
gold.
NSAIDS
AI ℞

37. Which of the following clinical findings is most commonly found in the hands of a patient with rheumatoid arthritis?
A. Heberden's nodes
B. Swan neck deformity
C. Button hole deformity
D. Ulnar deviation of MCP joints
E. Bouchard nodes

Ans: Ulnar deviation of MCP joints

Explanation: Ulnar deviation of MCP joints is the most common hand deformity in RA patients followed by palmar subluxation, button-hole deformity and swan neck deformity. Heberden's and Bouchard nodes are signs of osteoarthritis. Presence of RA factor increases the risk of developing hand deformities. Hand deformities occur early in the disease course and these deformities had major impact on daily life function. The presence of deformities is also a warning sign of a more severe disease.

38. A 47 year old male presented with pain and swelling of his right calf for 6 hours. He is a diagnosed case of RA on methotrexate. There is no history of trauma. Examination showed redness and tenderness of right calf with positive Homan sign. What is your diagnosis?
    - A. Deep vein thrombosis
    - B. Tendon rupture
    - C. Ruptured Backer cyst ✓
    - D. Septic Thrombophlebitis
    - E. Acute flare of RA

Ans: Ruptured Backer cyst

Explanation: Popliteal cyst or Backer cyst is a nonvascular benign lesion in popliteal fossa. It occurs mainly due to increase intra-articular fluid following inflammatory and degenerative diseases of the knee joint. It is usually associated with osteoarthritis, rheumatoid arthritis, trauma, meniscal tear and in Bahcet syndrome. Cyst formation occurs because of enlargement of the gastrocnemio-semimembranous bursa with increased synovial fluid. When it ruptures into the gastrocnemius muscle layers, it can stimulates the symptoms of DVT including acute pain, swelling, redness and tenderness on the calf. In a patient with history of RA, calf pain with redness and swelling is most probably due to rupture of baker cyst and it should be confirmed with ultrasound.

39. A 65 year old female with history of long standing RA on treatment presented with left foot drop of 1 day duration. Examination showed loss of left foot dorsiflexion and absent left ankle jerk. Labs were done which showed high ESR, CRP and positive RA factor. What is the best treatment for her?
    - A. Surgical decompression
    - B. High dose steroids → vasculitis
    - C. Cyclophosphamide
    - D. Rituximab
    - E. Plasmapheresis

biopsy

[illegible].

Ritu PPR

Neuro

Micro

-R

Ans: High dose steroids

Explanation: This RA patient presented with acute foot drop which can be occurred either due to vasculitis or entrapment neuropathy. Entrapment neuropathy initially presents with positive symptoms like burning, tingling sensation and numbness. Vasculitis causes sudden onset of mononeuritis or mononeuritis multiplex in RA. Rheumatoid vasculitis affects small to medium sized vessels which leads to infarction of peripheral nerves. It is a rare complication of RA. The preferred initial treatment is high dose steroids or combination of steroids and rituximab.

40. A patient with RA presented with feeling more fatigued over the last 2 months. She is taking methotrexate and sulfasalazine for her rheumatoid arthritis. Examination showed splenomegaly and rheumatoid nodules. Labs were done which showed Hb 7.5, wbc 2000 and platelets 75000. What is the most probable diagnosis?

A. Methotrexate associated Pancytopenia
B. Sulfasalazine associated Pancytopenia
C. Felty syndrome
D. Aplastic anemia
E. Hemolytic anemia

Ans: Felty syndrome

Explanation: Felty syndrome is characterized by the classic triad of RA, splenomegaly, and neutropenia. Although many patients with Felty syndrome are asymptomatic, some develop serious and life-threatening infections secondary to neutropenia. It is a potentially serious condition associated with sero-positive RA. Anemia and thrombocytopenia can also occur due to hypersplenism. Treatment is the aggressive management of underlying RA and splenectomy in some cases. Although sulfasalazine is associated with bone marrow suppression, but splenomegaly is not associated with this. Methotrexate causes folic acid deficiency and macrocytosis.

41. A 32 year old female has delivered her baby 1 week back. She is a diagnosed case of RA with symptoms better on HCQ during pregnancy. But for the last 3 days, she is experiencing more pain and stiffness in her fingers. She also wants to feed her baby. Which of the following is the safest drug that can be used for the treatment of this patient?

A. Hydroxychloroquine
B. Sulfasalazine
C. Low dose steroids 10
D. Azathioprine
E. Leflonamide

Ans: Low dose steroids

Explanation: Rheumatoid arthritis patients go into remission during pregnancy and in the postpartum period, there is flare up of symptoms. Many drugs are contraindicated in this period if patient wants to feed the baby. The best treatment is short acting NSAIDs and low dose steroids taking atleast 4 hours before lactation. Hydroxychloroquine is excreted in human milk and it is known that infants are extremely sensitive to the toxic effects of 4-aminoquinolines which is a metabolite of HCQ. Sulfasalazine should also be avoided in lactation because it can causes bloody diarrhea in infants. Azathioprine, methotrexate and leflonamide are contraindicated in lactation.

42. Poor prognosis in RA is associated with:

A. Disease duration over 6 months
B. No baseline deformity
C. Male sex
D. Rheumatoid nodules in females
E. Large joint involvement

Ans: Rheumatoid nodules in females

Explanation: Poor prognostic factors of rheumatoid arthritis are:

- Female sex

- Old age
- Long standing disease
- Smoking
- Positive family history
- Involvement of small joints at presentation
- Poly-articular involvement at presentation
- High ESR or CRP
- High titer of RA factor or anti-CCP
- Early joint erosion at disease onset
- Rheumatoid nodules
- Extra-articular manifestations
- Worse physical function

43. A 45 year old female who is sero-positive RA patient on methotrexate and sulfasalazine is considered for infliximab therapy. Which of the following test is recommended before starting infliximab for latent tuberculosis. Patient has history of BCG vaccination in childhood.

A. Chest X-RAY
B. Tuberculin skin testing
C. Interferon gamma release assay
D. MTB DNA
E. Sputum for AFB

Ans: Interferon gamma release assay

Explanation: All patients should have a tuberculin skin testing or interferon gamma release assay test before starting anti TNF therapy, because it increases the risk of developing active TB. In patient with history of BCG vaccination, skin testing is not reliable and IGRA is considered best for these patients. If this comes out to be positive, chest x-ray should be done along with sputum for AFB to rule out active TB. Patients should also be screened for hepatitis B before starting anti TNF therapy.

44. Which of the following is the most common extraarticular manifestation of rheumatoid arthritis?

A. Pleurisy
B. Pericarditis
C. Scleritis
D. Sicca syndrome
E. Neuropathy

BEC RA

R R R

Ans: Sicca syndrome

Explanation: The most common extraarticular manifestation is keratoconjunctivitis Sicca. Pleurisy is the most common respiratory manifestation and pericarditis is the most common cardiac manifestation. Scleritis is the most serious eye complication of RA. Neuropathy is a rare complication.

Organ	Most common	Other presentation
Cardiac	Atherosclerosis	Myocarditis, pericarditis, MR, AR

Pulmonary	Pleurisy	Exudative pleural effusion, ILD, pulmonary nodules, bronchiolitis obliterans, Caplan syndrome
Eyes	Sicca syndrome (overall most common)	Episcleritis, scleritis, keratitis, uveitis
Renal	Amyloidosis induced NS	
Nerve	Cervical myelopathy	Mononeuritis multiplex, carpal tunnel syndrome
Skin	Rheumatoid nodules	
Blood	Anemia of chronic disease	Felty syndrome, thrombocytosis
Other	Vasculitis, bacterial overgrowth	

45. A 58 year old female with a long standing history of rheumatoid arthritis presented with complaints of difficulty in raising her arms above her shoulders, combing her hair, rising from a seated position and climbing stairs. Which of the following test should be done in this patient?
    A. Serial CRPs
    B. MRI spine
    MCTD C. Anti CCP
    D. RA factor
    E. Muscle biopsy ✓

RA

Ans: Muscle biopsy

Explanation: This patient with history of long standing RA presented with typical history of proximal myopathy. There can be so many causes of this presentation in RA patients including vitamin D deficiency, steroids induced myopathy, polymyositis and HCQ related myopathy. Rheumatoid arthritis itself can also causes rheumatoid myositis in some patients. The best test to diagnose this condition and to differentiate it from other causes is to obtain muscle biopsy. It is the definite diagnostic test. But if biopsy is not given in options, serial CRPs can be used as a guide because other causes of myopathy do not increase CRP. Treatment is Steroids with excellent response.

46. Which of the following is the most common cause of death in patient with long standing rheumatoid arthritis?
    A. Sepsis
    B. Interstitial lung disease
    C. Cardiovascular disease ✓
    D. Renal failure
    E. Lymphoma

Ans: Cardiovascular disease

Explanation: The most common cause of death in patients with rheumatoid arthritis is cardiovascular disease. The incidence of coronary artery disease and carotid atherosclerosis is higher in RA patients than in the general population even when controlling for traditional cardiac risk factors such as hypertension, obesity, hypercholesterolemia, diabetes and cigarette smoking. The presence of elevated serum inflammatory markers appears to confer an increased risk of cardiovascular disease in these patients. Sepsis is the second most common cause of death after IHD.

47. A 62 year-old female suffering from destructive rheumatoid arthritis for more than 20 years presented with complaints of progressive gait impairment, weakness and numbness in hands and feet. Neurological examination showed an unstable gait, hyperreflexia and bilateral up going planters. What should be the next management step?

A. Pulse methylprednisolone
B. MRI brain
C. MRI cervical spine
D. X-ray cervical spine
E. Conservative management

Pa

Ans: MRI cervical spine

Explanation: History of destructive RA with upper motor neuron signs in both upper and lower limbs suggest the diagnosis of cervical myelopathy for which the next best step should be MRI cervical spine. Cervical myelopathy occurs in approximately 2.5% of patients suffering from rheumatoid arthritis for more than 14 years and is associated with notable morbidity and mortality. In these cases, compression of the spinal cord and brain stem is typically caused by atlantoaxial instability or atlantoaxial subluxation with associated vertical migration of the dens of C2 and accompanying retrodental pannus formation. Traditional imaging is conducted using conventional x-ray of the cervical spine, which gives information about spinal alignment. As it is related to lower cost, it is widely available and has a low radiation dose, it is especially suitable for screening of asymptomatic patients with RA in the outpatient setting. For the assessment of soft tissue, spinal cord, or nerve compression and myelopathy, cervical MRI is the imaging modality of choice. It is always indicated for the evaluation of patients with neurology deficit.

48. A 35 year old male presented with pain and swelling in the joints of right hands. Examination showed tenderness in MCP, PIP and DIP joints. There is also dystrophic hyperkeratosis of the fingers nails. What is the most likely diagnosis?

A. Rheumatoid arthritis
B. Sarcoidosis
C. Hemochromatosis
[✓ D. Psoriatic arthritis]
E. Palindromic rheumatism

Ans: Psoriatic arthritis

Explanation: Asymmetric poly or oligo arthritis involving DIP with nail signs is psoriatic arthritis. Six patterns of nail involvement is identified in psoriatic arthritis: pitting, horizontal ridging, onycholysis, yellowish discoloration of nail margins, dystrophic hyperkeratosis and combination of all these.

49. Your house officer came with an X-ray of hands report which states that patient has typical pencil in cup appearance. What is the diagnosis on the basis of this report?

A. Rheumatoid arthritis
B. SLE
C. Psoriatic arthritis

D. Osteoarthritis
E. Chronic gout

Ans: Psoriatic arthritis

Explanation: Characteristic radiographic features of psoriatic arthritis (PsA) include joint erosions, joint space narrowing, bony proliferation including periarticular and shaft periostitis, osteolysis including ***"pencil in cup" deformity*** and acro-osteolysis, ankylosis, spur formation, and spondylitis. Unlike rheumatoid arthritis, joint involvement in PsA is often asymmetrical and may be oligoarticular; osteoporosis is atypical. Although erosive changes in early PsA are marginal as in RA, they become irregular and ill defined with disease progression because of periosteal bone formation adjacent to the erosions. In severe cases, erosive changes may progress to development of pencil in cup deformity or gross osteolysis. These features are typical of arthritis mutilans. Asymmetrical erosions may be visible radiographically in the carpus and in the metacarpophalangeal, proximal interphalangeal, and distal interphalangeal joints of the hands, but the DIP joints are often the first to be affected. Abnormalities are seen in the phalangeal tufts and at the sites of attachments of tendons and ligaments to the bone. The presence of DIP erosive changes may provide both sensitive and specific radiographic findings to support the diagnosis of PsA. Also, the hands tend to be involved much more frequently than the feet with a ratio of nearly 2:1.

50. Which of the following is not a characteristic feature of psoriatic arthritis?
A. Arthritis can be present before skin involvement
B. Equally present in males and females
C. Presence of enthesopathy
D. Hydroxychloroquine should be given to all patients
E. X-ray showed juxtaarticular new bone formation

Ans: Hydroxychloroquine should be given to all patients

Explanation: HCQ should be avoided in psoriatic arthritis because it causes acute flare of skin manifestation of psoriasis. In 60-70% of cases, psoriasis precedes joint disease, in 15-20% cases, both appear within 1 year of each other and in 15-20% cases, the arthritis precedes the onset of psoriasis. The frequency in men and women is almost equal, although the frequency of disease patterns differs in two sexes. Several articular features distinguish psoriatic arthritis from other joint disorder; such hallmark features include dactylitis and enthesitis. Radiographic evidence of Juxta articular new bone formation adjacent to the marginal erosions (whiskering) in the hand or foot is a criteria for psoriatic arthritis diagnosis.

51. A 26 year old female presented with pain and stiffness in her hands. She has history of psoriasis on treatment with topical mometasone and calcipotriol. Examination showed active synovitis in small joints of hands with severe plaque psoriasis. What medication you will add?
A. Sulfasalazine
B. Hydroxychloroquine
C. Oral prednisone
D. Methotrexate
E. Infliximab

Ans: Methotrexate

Explanation: Patient with both psoriatic arthritis and psoraisis should be started on methotrexate because it has dramatic effect on skin disease than any other DMARD. It is also very effective at improving arthritis symptoms. Anti TNF are used 1st line in patients who have predominantly axial joints involvement. HCQ should be avoided. Oral steroids should also be avoided because when oral steroids are tapered off, skin disease gets worsened.

52. A 32 year old male presented with complaints of pain in right knee and left ankle joint for 3 days. Pain is worsened with active and passive movements at joints. Patient is also taking eye drops for painful red eyes and is on ciprofloxacin for a suspected UTI. Examination showed plaques like lesions on both soles. What is the most likely diagnosis?
    - A. Gonococcal arthritis
    - B. Reiter arthritis
    - C. Still disease
    - D. Rheumatic fever
    - E. Psoriatic arthritis

Ans: Reiter arthritis

Explanation: The triad of arthritis, conjunctivitis and urethritis is classical for Reiter syndrome. Keratoderma blennorrhagica is a feature in Reiter syndrome where plaques are evident on the soles and palms. About 75% patients are positive for HLA B27. Gonococcal arthritis does not cause conjunctivitis.

53. Which of the following is **not** a characteristic feature of reactive arthritis?
    - A. Asymmetrical low extremity involvement
    - B. Symmetrical upper extremity involvement
    - C. Symptoms after 2-4 weeks of diarrhea
    - D. Associated with circinate balanitis
    - E. NSAIDs are mainstay of treatment

Ans: Symmetrical upper extremity involvement

Explanation: Reactive arthritis is followed by diarrhea and dysentery 1-4 weeks after these symptoms. Typical characteristic of reactive arthritis are:

- Acute onset with malaise, fever and fatigue
- Asymmetric oligoarthritis affecting the weight bearing joints predominantly of the lower extremities.
- Sausage shaped finger due to dactylitis, enthesopathy and sacroilitis
- Associated with conjunctivitis and noninfectious urethritis.
- Mucocutaneous findings are keratoderma blennorrhagica, circinate balanitis and vulvovaginitis.
- The diagnosis is clinical with no single test being diagnostic
- NSAIDs are the mainstay of treatment

(Arthritis with diarrhea has three common causes;

Diarrhea + arthritis after 2-4 weeks=> reactive arthritis

Long standing arthritis followed by chronic diarrhea=> Whipple disease

Chronic diarrhea with on and off arthritis => Enteropathy associated spondyloarthopathy.

54. A 27 year old male presented with complaints of low back pain of 3 years duration associated with stiffness of low back. Pain is radiating to both buttocks and stiffness is worse in the morning which gets better with activity. Examination showed limited flexion of spine. What is the most probable diagnosis?
   A. Mechanical low back pain
   B. Sprain of lumber ligaments
   C. Ankylosing spondylitis
   D. Rheumatoid arthritis
   E. Multiple myeloma

Ans: Ankylosing spondylitis

Explanation: History of low back pain in a young male with early morning stiffness which gets better with activity is typical for ankylosing spondylitis.

55. Which of the following radiological investigations is needed for the diagnosis of ankylosing spondylitis?
   A. X-ray lumbosacral spine
   B. MRI spine
   C. CT scan spine
   D. USG spine
   E. Myelography

Ans: X-ray lumbosacral spine

Explanation: Imaging is an integral part of the management of patients with ankylosing spondylitis and axial spondyloarthritis. Radiography is the conventional, albeit insensitive, gold standard method for assessment of structural damage in spine and sacroiliac joints, whereas MRI has gained a decisive role in monitoring disease activity. Radiography is used in the Modified New York criteria for ankylosing spondylitis. Sacroilitis is the earliest change in AS and in first 2 years of the disease process, these changes are only detectable by MRI but in these patients, AS is labeled as non-radiographic AS. According to modified New York criteria, AS may be diagnosed if, in addition to one clinical criterion being present, grade 2 sacroilitis (minimal sacroilitis: loss of definition of the joint margins, minimal sclerosis, joint space narrowing and erosions) or higher occurs bilaterally, or grade 3 (moderate sacroilitis: definite sclerosis on both sides of the joint, erosions, and loss of joint space) or grade 4 (complete bony ankylosis) occurs unilaterally.

56. A 45 year old male presented with complaints of neck pain associated with stiffness for 5 years. The pain is progressively worsening in intensity and duration and for the last 6 months he is unable to move his neck freely. An x-ray of cervical spine showed complete fusion of the anterior and posterior elements and bilateral upper zone hazziness in apices of lungs. What is the most probable diagnosis?
   A. Rheumatoid arthritis
   B. Psoriatic arthritis

C. Cervical spondylosis
D. Ankylosing spondylitis
E. Spine tuberculosis

Ans: Ankylosing spondylitis

Explanation: History of long standing neck pain with stiffness and limited neck movements with typical x-ray appearance of bamboo spine (fusion of anterior and posterior elements) and apical fibrosis is suggestive of ankylosing spondylitis. Neck pain and stiffness from involvement of cervical spine is usually a late manifestation of AS but occasionally dominant symptom. Typical x-ray findings in ankylosing spondylitis are:

- Small erosions at the corners of vertebral bodies with reactive sclerosis: Romanus lesions of the spine (shiny corner sign). It is the earliest radiographic sign of AS in spine.
- Squaring of vertebral bodies
- Diffuse syndesmophytic ankylosis causing bamboo spine. Syndesmopytes are paravertebral ossification running parallel to the spine.
- Linear ossification along the central spine; representing interspinous ligament ossification which gives a "dagger spine" appearance on frontal radiographs.
- Sacroilitis is the first manifestation of AS, it is usually symmetrical and bilateral. Subchondral erosions, sclerosis, and proliferation on the iliac side of the SI joints occur initially and in end stage, a thin line is visible only.

57. A 25 year old male presented with low back pain associated with stiffness of low back which is worse before walking. Examination showed reduced spinal movements in lateral flexion and rotation and a positive modified Schobers test. What should be the most appropriate initial treatment for him?
A. Sulfasalazine
B. Methotrexate
C. Infliximab
D. Physiotherapy+ Naproxen
E. Oral prednisone

Ans: Physiotherapy+ naproxen

Explanation: This young patient has typical history of ankylosing spondylitis. Modified Schobers test is used to assess the mobility of the spine by following steps:

- Patient is standing, marks both posterior superior iliac spine (PSIS) and then draw a horizontal line at the center of both marks.
- A second line is marked 5 cm below the first line
- A third line is marked 10 cm above the first line
- Patient is then instructed to flex forward as if attempting to touch his/her toes, remeasure distance between the top and bottom line.
- An increase of less than 5cm is a positive test and may indicate ankylosing spondylitis (AS).

The best initial treatment for AS is NSAIDs and physiotherapy. Mostly patients respond to NSAIDs therapy and guidelines recommend that continuous treatment with NSAIDs should be taken rather than intermittent treatment for symptomatic AS. Oral steroids are not indicated in AS.

58. A 34 year old male is diagnosed as a case of ankylosing spondylitis 6 months back. Patient was started on twice daily naproxen 500 mg with physiotherapy but patient is still complaining of pain and stiffness which is causing disturbance in performing activities of daily living. Which of the following would be the next best management for him?
    A. Sulfasalazine
    B. Methotrexate
    C. Infliximab ✓
    D. Tofacitinib
    E. Oral prednisone

Ans: Infliximab

Explanation: Anti TNF therapy is highly recommended in patients who do not respond to initial treatment with NSAIDs and whose symptoms are troublesome. Anti TNF therapy is recommended over tofacitinib therapy. Anti TNF therapy is the only DMARD recommended in the management of axial ankylosing spondylitis. Sulfasalazine and methotrexate are conditionally recommended in ankylosing spondylitis for patients who have peripheral arthritis rather than axial joints involvement.

59. Which of the following is the most common extraarticular manifestation of ankylosing spondylitis?
    A. Aortic Regurgitation
    B. Heart block
    C. Apical fibrosis of lungs
    D. Anterior uveitis ✓
    E. Amyloidosis

A

Ener

Ans: Anterior uveitis

Explanation: The most common extraarticular manifestation of AS is acute anterior uveitis which occurs in up to 40% of patients. AR occurs in small number of patients and sometimes associated with 3rd degree heart block. Apical fibrosis is a rare and late manifestation of long standing AS. Amyloidosis is very rare in AS.

60. A 34 year old male presented with history of recurrent high grade fever associated with pain and tenderness in multiple joints. He also complains of a rash on his chest during the febrile episode. Examination showed tenderness in almost all joints of upper and lower limbs. Labs were done which showed Hb 13.1, WBC 12000, platelets 560,000, CRP 55, ESR 60, RA negative, CCP negative, ANA negative and ferritin 2560. What is the most likely diagnosis?
    A. Sero negative Rheumatoid arthritis
    B. Systemic lupus erythematous
    C. Hemophagocytic lymphohistiocytosis
    D. Adult onset Still's disease
    E. Macrophage hyperactivation syndrome

Ans: Adult onset Still's disease

Explanation: The negative RA factor and CCP with history of high grade fever rules out rheumatoid arthritis. Negative ANA also makes SLE less likely. High ferritin is present in adult onset Still disease, HLH and MHAS. But HLH and MHAS are life threatening conditions with pancytopenia and multisystem involvement. Still disease is associated with polyarthritis, salmon pink rash, fever, negative ANA and RA and high ferritin. Yamaguchi criteria is used for the diagnosis of Still's disease which includes major and minor criteria:

Major criteria;

- Fever of at least 39°C for at least a week
- Arthralgia or arthritis for at least 2 weeks.
- Nonpruritic salmon colored rash on trunk/extremities.
- Granulocytic leukocytosis (10,000 or greater).

Steroid
[illegible]
[illegible]

Minor criteria;

- Sore throat
- Lymphadenopathy
- Hepatosplenomegaly
- Negative ANA and RA factor

Diagnosis requires at least 5 features, with at least 2 of these being major diagnostic criteria.

Criteria for diagnosis of hemophagocytic lymphohistiocytosis:

- Fever – Seven or more days of a temperature as high as 38.5°C (101.3°F)
- Splenomegaly - A palpable spleen greater than 3 cm below the costal margin
- Cytopenia – Counts below the specified range in at least 2 of the cell lineage.
- Hypofibrinogenemia or hypertriglyceridemia.
- Hemophagocytosis – Must have tissue demonstration from lymph node, spleen, or bone marrow without evidence of malignancy.

All 5 criteria must be met to establish a diagnosis of hemophagocytic lymphohistiocytosis.

61. A 39 year old male is diagnosed as a case of adult onset Still disease. He is having multiple joint pains associated with periodic high grade fever. Labs showed very high ferritin levels. Which of the following is the best initial treatment for him?
   A. Naproxen
   B. Oral prednisone
   C. Sulfasalazine
   D. Methotrexate
   E. Infliximab

Ans: Oral prednisone

Explanation: Corticosteroid are the first-line treatment for Still disease, regardless of the clinical presentation. Usually, prednisolone is preferred among steroids. Steroids control symptoms in about 60%

of Still's disease patients. Methotrexate and cyclosporine are used as steroid sparing agents and as maintenance therapy. Sulfasalazine causes severe adverse reactions in these patients (ranging from gastrointestinal symptoms such as abdominal pain, nausea, and vomiting to severe myelosuppression) and should be avoided. IL-1 inhibitors (anakinra, canakinumab and rilonacept) are considered the mainstay of treatment for refractory adult onset Still disease.

62. A 32 year old female presented with gritty, dry and sore eyes. She also complains of difficulty in swallowing due to dryness of her mouth and pain during sexual intercourse. Her ESR is elevated and ANA and anti- Ro are positive. What is the most likely diagnosis?
    A. Dermatomyositis
    B. Endometriosis
    C. Systemic sclerosis
    D. Primary Sjögren syndrome
    E. Systemic lupus erythematous

A

Ans: Primary Sjögren syndrome

Explanation: Primary Sjögren syndrome is an autoimmune condition in which dry eyes (keratoconjunctivitis sicca) and dry mouth (xerostomia) result from lymphocytic infiltration of lacrimal and salivary glands. Primary Sjögren syndrome occurs in the absence of another underlying rheumatic disorder, whereas secondary Sjögren syndrome is associated with another underlying rheumatic disease, such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), or scleroderma. Most patients with primary Sjögren syndrome have two specific antibodies: against Ro (SS-A) and La (SSB) antigens.

63. A 15 year old boy known to have some bleeding disorder presented with a painful swollen right knee. The movement of the right knee is severely restricted by pain. All the inflammatory markers are normal and RA factor and ANA is negative. What is the most likely diagnosis?
    A. Acute gout
    B. Acute pseudogout
    C. Septic arthritis
    D. Hemophilic arthritis
    E. Juvenile idiopathic arthritis

pue
Metho
Swph
Akra

Ans: Hemophilic arthritis

Explanation: Spontaneous joint bleeding and repeated hemarthroses lead to hemophilic arthropathy—a debilitating disease with a significant negative impact on mobility and quality of life. Patient with history of Hemophilia have tendency to bleed into joints spontaneously. Prophylactic factor VIII concentrate is used to prevent this disabling complication. Hemophilic arthropathy is often monoarticular or oligoarticular. Large joints are most commonly involved in the following order of frequency; knee> elbow>ankle> hip>shoulder.

64. A 22 year old female presented with a facial rash, fever and malaise. She is also complaining of painful joints of her wrists and fingers. She also complains of recurrent painful oral ulceration. Which of the following is most likely to be found in her blood?
    A. Anti dsDNA antibodies
    B. Anti-Smith antibodies

C. Microcytic anemia
D. Low C3 and C4 levels
E. Positive RA factor

Ans: Low C3 and C4 levels

99%

Explanation: From the history, it is most likely that this patient is having SLE which occurs in young females with a female to male ratio of 9:1. SLE is an autoimmune disease and leads to immune complex deposition which leads to low level of C3 and C4. These are the most common abnormalities after positive ANA level and persistent low level of C3 and C4 increases the risk of lupus nephritis flare. Anti dsDNA is positive in 50-70% of patients with SLE. The most common anemia in SLE is normocytic normochromic anemia due to anemia of chronic disease.

65. Which of the following is the most common organ system affected by SLE?
    A. Skin
    B. Joints
    C. Kidney
    D. CNS
    E. Blood cells

[illegible]
C3-C4

Ans: Joints

Explanation: Joints are the most common organ systems affected by SLE and joints are involved in more than 95% of patients with SLE. It is followed by skin involvement.

66. A 27 year old female presented with long standing history of joints pains and recurrent oral ulceration is diagnosed as a case of SLE after her ANA and anti dsDNA antibodies came to be positive. She has no other complaints and all other blood tests and urinalysis are normal. What treatment should be given to this patient?
    A. Methotrexate
    B. Low dose prednisone
    C. Hydroxychloroquine
    D. Azathioprine
    E. Mycophenolate

Ans: Hydroxychloroquine

Explanation: For patients with SLE, hydroxychloroquine should be given to all patients with any manifestation of SLE. For joints and skin disease, HCQ along with NSAIDs or topical steroids is recommended. Oral prednisone is not recommended for joints manifestation only.

67. A 28 year old female presented with joint pains, butterfly shaped facial rash, oral ulceration and low grade fever for 3 months. Which of the following is the best initial test for this patient?
    A. CBC
    B. Urinalysis
    C. RA factor
    D. ANA
    E. dsDNA

Ans: ANA

Explanation: History suggests that this patient most probably having SLE and the best screening test for SLE is ANA which is present in more than 95% of patients with SLE. ANA is the most common antibodies present in SLE. Anti dsDNA is more specific test for SLE and is present in 60% of patients.

68. Which of the following blood test is used to monitor the disease activity of SLE?
    - A. ANA level
    - B. CRP level
    - C. Anti dsDNA
    - D. RA factor
    - E. Anti Sm antibodies

Ans: Anti dsDNA

Explanation: Antibodies to dsDNA fluctuate with disease activity and a rising antibodies to dsDNA should alert the physician that a flare is imminent particularly when associated with falling C3 levels. Other autoantibodies are not helpful as a marker of lupus activity. ESR paired with CRP help to distinguish lupus flare from infection. Raised ESR+ normal CRP=> lupus flare, raised ESR+raised CRP=> infection.

69. Which of the following feature is **not** included in the criteria used for the diagnosis of SLE?
    - A. Painless oral ulcers
    - B. Erosive synovitis of peripheral joints
    - C. Persistent proteinuria of >0.5 g/day
    - D. Leucopenia or lymphopenia
    - E. Positive anti phospholipid antibodies

Ans: Erosive synovitis of peripheral joints

Explanation: Non Erosive rather than erosive synovitis of two or more peripheral joints is used in the criteria. SLE very rarely causes erosions and deformity.

Definitions of SLE classification criteria:

ANA: ANA at a titer of >=1:80 on Hep-2 cells or an equivalent positive test at least once; otherwise, the patient is considered not to have SLE. If it is present, 22 "additive weighted" classification criteria are considered, comprising seven clinical domains and three immunologic domains. Each criterion is assigned points, ranging from 2 to 10. Patients with at least one clinical criterion and 10 or more points are classified as having SLE:

Domain	Criteria	Points
Constitutional	Fever > 38.3 C°	2
Hematologic	Leukopenia (<4000	3
	Thrombocytopenia (<100,000)	4
	Autoimmune hemolysis	4
Neuropsychiatric	Delirium	2
	Psychosis	3
	Seizure	5
Mucocutaneous	Non-scarring alopecia	2

	Oral ulcers	2
	Subacute cutaneous or discoid lupus	4
	Acute cutaneous lupus	6
Serosal	Pleural or pericardial effusion	5
	Acute pericarditis	6
Musculoskeletal	Joint involvement	6
Renal	Proteinuria > 0.5 g/24 h	4
	Renal biopsy class II or V lupus nephritis	8
	Renal biopsy class III or IV lupus nephritis	10
Antiphospholipid antibodies	Anti-cardiolipin antibodies or Anti-β2GP1 antibodies or Lupus anticoagulant	2
Complement proteins	Low C3 or low C4	3
	Low C3 and low C4	4
SLE-specific antibodies	Anti-dsDNA antibody or Anti-Smith antibody	6

AS
Anti

ANA
Anti

pleur

70. Which of the following is the most common cardiovascular manifestation of SLE?
A. Myocarditis
B. Libman-Sacks endocarditis
C. Aortic Regurgitation
D. Pericarditis
E. Mitral regurgitation

[illegible]
T.B

pleur
Anti
Anti

Ans: Pericarditis

Explanation: The most common CVS manifestation of SLE is pericarditis. Myocarditis and Libman-Sacks endocarditis can also occur but less frequently than pericarditis.

71. A 32 year old female is being investigated for a facial skin rash with an autoantibodies screen which showed positive ANA, anti dsDNA and positive anti ribosomal P antibodies. Patient asked you about the significance of positive anti ribosomal antibody. Positive anti ribosomal P antibodies is related to increased risk of which manifestation of SLE?
A. Lupus dermatitis
B. Lupus nephritis
C. Lupus cerebritis
D. Lupus serositis

E. Lupus vasculitis

Ans: Lupus cerebritis

Explanation: Autoantibodies to ribosomal P proteins (anti-P antibodies) are detected in 12-16% of patients with SLE and have been associated with an increased risk of developing lupus cerebritis especially psychiatric manifestation of cerebritis like depression and psychosis. These are also associated with lupus hepatitis. The presence of these antibodies have a protective effect for developing lupus nephritis.

Common manifestations of lupus cerebritis are cerebrovascular disease, seizures, meningitis and neuropathy. Depression is the most common psychiatric symptom.

72. A 26 year old female presented with history of intractable seizures in the emergency. She is a diagnosed case of SLE on hydroxychloroquine therapy for arthralgia. Labs were done which showed high ESR and normal CRP. CT brain showed cerebral edema and MRI was done which showed white matter abnormalities. What is the most appropriate initial treatment for this patient?
    - A. Broad spectrum antibiotics
    - B. Acyclovir IV
    - C. IV methylprednisolone
    - D. IV Rituximab
    - E. IV cyclophosphamide

Cerebritis

Ans: IV methylprednisolone

Explanation: This patient with a previous diagnosis of SLE presented with status epilepticus which is a common presentation of lupus cerebritis. The treatment of choice for lupus cerebritis is pulsed IV methylprednisolone. Cyclophosphamide is used if initial steroids treatment has incomplete clinical response. Cyclophosphamide can also be used in addition to steroids for the initial treatment. Treatment is continued for 6 months. Rituximab is used when there is no clinical response to initial treatment with steroids and cyclophosphamide. Low CRP rules out infectious etiology. (Steroid 1st line for lupus cerebritis, but if there is an option of steroids + cyclophosphamide=> it is better option than steroids alone)

73. A 39 year old female with a history of SLE, hypertension, psoriasis and gout for 7 years came to you with deformed hands for 6 months. She is able to perform activities of daily living without any functional impairment or pain. Examination showed marked ulnar subluxation and deviation at MCP joints which is easily reducible. X-ray of both hands are normal. What is the most likely diagnosis?
    - A. Rheumatoid arthritis
    - B. Chronic tophaceous gout
    - C. Jaccouds arthropathy
    - D. Psoriatic arthritis
    - E. Hemochromatosis

Ans: Jaccouds arthropathy

Explanation: All of the above cause pain and functional impairment with hand deformities except Jaccouds arthropathy. Normal x-rays also rule out other diseases. Jaccouds arthropathy is a deforming non-erosive arthropathy characterized by ulnar deviation of the second to fifth fingers with metacarpophalangeal joint subluxation that is correctable or reducible with physical manipulation. It is typically associated with SLE and related to ligaments laxity.

74. A 25 year old female diagnosed case of SLE came for advice as she wants to conceive. Her disease is controlled with HCQ. Blood tests are done which showed a positive screening test for anti -Ro antibodies. What advice you will give to this patient?
   - A. She is protected to have flare of SLE during pregnancy
   - B. She is at risk of having lupus nephritis during pregnancy
   - C. There is a risk of early trimester abortion
   - D. There is a risk of congenital heart block in fetus
   - E. There is a risk of lupus cerebritis during pregnancy

Ans: There is a risk of congenital heart block in fetus

Explanation: Complete congenital heart block (CCHB) is the most severe manifestation of neonatal lupus syndrome, associated with a mortality rate of up to 31%. It is caused by irreversible damage to the cardiac conduction system due to the transplacental passage of maternal antibodies to the fetus. Anti-Ro (SSA) and anti-La (SSB) antibodies are usually detected in sera of mothers of children with prenatally diagnosed CCHB and in cardiac tissues of affected newborns. Pacemaker insertion is required in most infants during the first three months of life. Assays for anti-Ro (SSA) and anti-La (SSB) antibodies should be performed on sera of pregnant women with SLE and newborns with CCHB. Anti-Ro antibodies are associated with reduced risk of lupus nephritis. Antiphospholipid antibodies are associated with increased risk of early trimester abortion.

75. A 57 year old hypertensive patient presented with complaints of pain in small joints of hands, facial skin rash with myalgia, low grade fever and chest pain on taking deep breath for 3 weeks. He is started on a new drug for hypertension 1 month back. Labs were done which showed high ESR and CRP with a positive anti histone antibody test. Which of the following drug is responsible for this presentation?
   - A. Amlodipine
   - B. Methyldopa
   - C. Hydralazine
   - D. Lisinopril
   - E. Indapamide

Ans: Hydralazine

Explanation: Symptoms of arthralgia, skin rash with pleuritis and positive anti histone antibody is suggestive of drug induced lupus. Hydralazine is a common cause of drug induced lupus. Hydralazine induced lupus is frequently manifested by arthralgia, myalgia, fever, rash (malar rash is common), hepatosplenomegaly, lymphadenopathy, and pleuritis. ACE inhibitors, CCB and hydrochlorothiazide are associated with subacute cutaneous lupus erythematosus. Methyldopa is associated with coombs positive hemolytic anemia.

76. Which of the following is the characteristics feature of drug induced lupus?
   - A. Renal involvement

B. CNS involvement
C. Anemia and lymphopenia
[✓ D. Normal C3 and C4]
E. High titer of dsDNA

Ans: Normal C3 and C4

Explanation: Drug induced lupus does not involve renal, CNS and blood. ANA and anti-histone antibodies are positive whereas dsDNA will be negative. C3 and C4 levels remain normal in drug induced lupus.

77. Which of the following anti tuberculous drug is associated with drug induced lupus?
    A. Isoniazid ✓
    B. Rifampin
    C. Ethambutol
    D. Pyrazinamide
    E. Streptomycin

PS
HI
Is

Ans: Isoniazid

Explanation: Isoniazid is associated with drug induced lupus. Up to 25% of patients taking INH have detectable ANA titers, but only 1% develop systemic DILE, which requires taking dosages of 300 to 900mg/d for a period ranging from 4 weeks to 14 months.

Common disease states and associated drug induced lupus culprit drug:

- Tuberculosis with lupus=> isoniazid
- Hypertension with lupus=> Hydralazine
- Arrhythmia with lupus=> procainamide
- Acne with lupus => minocycline
- Epilepsy with lupus=> phenytoin

phenytoin
Carb SIADH

RA on treatment develops lupus=> Infliximab

78. A 25 year old female with history of SLE presented with recurrent abortions. You suspect secondary antiphospholipid antibody syndrome. CBC showed thrombocytopenia. You want a simple and quick test for screening. Which test you will recommend?
    A. CRP level
    B. D-dimers
    C. Partial prothrombin time
    D. Thrombin time
    E. Fibrinogen level

Ans: Partial Prothrombin time (APTT)

Explanation: A prolonged aPTT may indicate a clotting-factor deficiency or the presence of an inhibitor of coagulation that is either specific (e.g., antibody to factor VIII) or nonspecific (e.g., lupus anticoagulant). Lupus anticoagulant can affect in vitro tests of blood coagulation but typically is not associated with bleeding. After mixing with plasma in a 1:1, aPTT does not correct in the presence of lupus anticoagulant.

APTT can be used as a screening test for the presence of lupus anticoagulant. Sensitivity is good but specificity is poor.

79. Which of the following is **not** a typical feature of primary antiphospholipid antibody syndrome?
    - A. Arterial thrombosis
    - B. Venous thrombosis
    - C. Migraine
    - D. Recurrent abortions
    - E. Malar rash and oral ulcers ✓

Ans: Malar rash and oral ulcers

Explanation: Primary APLS is not associated with any other CTD whereas secondary APLS is associated with other diseases commonly SLE. Venous and/or arterial thrombosis with recurrent 1st trimester abortions are the most important clinical manifestations of APLS. Other clinical features are livedo reticularis, migraine, epilepsy, chorea, cerebellar ataxia, transverse myelitis, arthritis, thrombocytopenia and hemolytic anemia. In primary APLS, features of SLE are not seen.

80. A 26 year old female patient of SLE has been investigated, due to an isolated increase in APTT, showed the presence of high titers antibodies to anticardiolipin and beta-2 GPI which are confirmed after 12 weeks again. Patient has no history of any thrombosis before and no history of pregnancy loss. What is the next best management for her?
    - A. Oral prednisone
    - B. Aspirin 81 mg
    - C. Warfarin with INR 2.5-3.0
    - D. Warfarin with INR 3.0-4.0
    - E. No need of any treatment

325 mg

XII VIII
VWF XIII

Ans: Aspirin 81 mg

Explanation: This patient with SLE has typical antibodies of antiphospholipid antibody syndrome and is asymptomatic. In asymptomatic APLS carriers (not fulfilling any vascular or obstetric APLS classification criteria) with a high-risk profile with or without traditional risk factors, prophylactic treatment with low-dose aspirin (75 – 100 mg daily) is recommended. The high risk profile is defined as the presence (in 2 or more occasions at least 12 weeks apart) of lupus anticoagulant, or of double (any combination of lupus anticoagulant, anticardiolipin antibodies or antibeta2 glycoprotein I antibodies) or triple (all three subtypes) APL positivity, or the presence of persistently high aPL titers. This patient is in the high risk profile, so low dose aspirin is best treatment for her at this stage. Low dose aspirin is also used in patients with high risk profile and SLE without prior thrombotic or obstetric APLS and non-pregnant women with a history of obstetric APLS only.

81. A 32 year old female diagnosed case of SLE presented with pain in left calf region. Doppler showed DVT of left leg involving popliteal and femoral veins. Further testing showed positive lupus anticoagulant and anti cardiolipin antibodies. What should be the best treatment for her?
    - A. Warfarin for 3 months
    - B. Warfarin for 6 months
    - C. Warfarin for lifelong

2-3 3.0
2-4. 3.5

D. Rivaroxaban for 6 months
E. Rivaroxaban for Lifelong

Ans: Warfarin for life long

Explanation: In patients with APLS and first unprovoked venous thrombosis, after an initial therapy with unfractionated heparin or LMWH and bridging therapy of heparin plus warfarin, treatment with warfarin with a target INR of 2–3 is recommended. Rivaroxaban should not be used in patients with APLS due to the high risk of recurrent events. In patients with unprovoked first venous thrombosis, anticoagulation should be continued long term. For provoked DVT, therapy should be continued for a duration recommended for patients without APLS. If recurrent venous thrombosis in APLS with warfarin and target INR 2-3=> add aspirin or increase INR to 3-4 or change to therapeutic dose heparin.

82. A 24 year old female presented with sudden onset of left sided weakness. CT brain was done which showed middle cerebral artery infarct. As patient was young with no other risk factors for stroke, a thrombophilia screen was done which showed positive antibodies for APLS. What should be the best management for her?

A. Aspirin + clopidogrel
2
B. Rivaroxaban
C. Warfarin with target INR 2-3
D. LMWH for 2 years
E. Aspirin alone

Ans: Warfarin with target INR 2-3 ✓

Explanation: In patients with APLS and 1st arterial thrombosis episode, treatment with VKA with INR 2 – 3 or INR 3 – 4 is recommended, considering the individual's risk of bleeding and recurrent thrombosis. Treatment with VKA with INR 2 – 3 plus low dose aspirin may also be considered for APLS and arterial thrombosis. Rivaroxaban is not recommended in arterial thrombosis.

83. A 26 year old female is referred to you as she is 6 weeks pregnant now. Patient has history of 4 early pregnancy losses and a work up for recurrent abortion showed positive tests for antiphospholipid antibody syndrome. She has no history of venous or arterial thrombosis. What will you recommend?

A. Aspirin throughout pregnancy
B. Warfarin throughout pregnancy
C. LMWH throughout pregnancy
D. Aspirin+ warfarin throughout pregnancy
E. Aspirin+ LMWH throughout pregnancy

Ans: Aspirin+ LMWH throughout pregnancy

Explanation: In women with a history of obstetric APLS only (no prior thrombotic events), with or without SLE, with a history of ≥ 3 recurrent spontaneous miscarriages < 10th week of gestation and in those with a history of fetal loss (≥ 10th week of gestation), combination treatment with aspirin and heparin at **prophylactic** dosage during pregnancy is recommended. Warfarin is contraindicated in pregnancy. In women with a high-risk aPLS profile but no history of thrombosis or pregnancy complications (with or without SLE), treatment with aspirin (75 – 100 mg/day) during pregnancy is recommended. LMWH prophylactic dose for 6 weeks after delivery should be considered to reduce the risk of maternal thrombosis postpartum.

If still pregnancy loss occurs despite heparin and aspirin treatment, further options are **therapeutic** dose heparin, HCQ or low dose steroids during 1st trimester.

In women with a history of thrombotic APLS, combination treatment of aspirin and heparin at **therapeutic** dosage during pregnancy is recommended.

84. Which of the following characteristics in patients with Raynaud's phenomena suggests primary Raynaud's disease rather than secondary Raynaud's disease?

A. Onset at the age of 45 year
B. Unilateral symptoms
C. Presence of digital ulceration
D. Symmetrical symptoms in young patient
E. Presence of skin rash

Ans: Symmetrical symptoms in young patient

Expianation: Raynaud's phenomena can be Primary (disease) or secondary (phenomenon). Raynaud's disease typically presents in young women with bilateral and symmetric symptoms most present in cold weather. Secondary Raynaud's phenomenon in comparison occurs mostly after 40 year age, have unilateral symptoms, rashes and presence of autoantibodies. There can be features of other connective tissue diseases and digital ulceration in secondary Raynaud's phenomenon.

Causes of secondary Raynaud's phenomenon:

- Scleroderma most common
- SLE
- RA
- MCTD
- Type 1 cryglobulinemia
- Ergots and OCP use
- Cervical rib

Treatment is CCB initially and IV prostaglandins in severe cases.

85. A 43 year old female presented with a history of dyspepsia for 3 months not getting better with treatment with omeprazole. She also complains of appearance of white color hard lumps on the fingertips. Examination showed tight and thick skin upto the wrist joints and wrinkling of skin around the mouth. What is the most likely diagnosis?

A. Diffuse cutaneous systemic sclerosis
B. Systemic sclerosis sine scleroderma
C. Limited cutaneous systemic sclerosis
D. Eosinophilic fasciitis
E. Stiff skin syndrome

Ans: Limited cutaneous systemic sclerosis

Explanation: This patient has history of dyspepsia with calcinosis and thick skin on hands and face. The combination of these findings suggest systemic sclerosis as the cause. As patient has skin involvement distal to the elbows and face with no trunk involvement, it is limited cutaneous systemic sclerosis. If the Raynaud's phenomena and other features of systemic sclerosis occur in the absence of skin thickening, it is called systemic sclerosis sine scleroderma. Eosinophilic fasciitis is a rare disorder associated with rapid onset of skin induration with typical cobblestone " peau d' orange" appearance. It is not associated with Raynaud's phenomena and internal organ involvement.

Features of limited vs diffuse cutaneous systemic sclerosis:

Features	Limited	Diffuse
Skin involvement	Indolent onset, Distal to elbow, face, slow progression	Rapid onset, fingers, extremities, face, trunk, rapid progression
Raynaud's phenomena	Precedes other manifestation by years, associated with critical ischemia of digits	Onset coincident with skin involvement, critical ischemia less common
Musculoskeletal	Mild arthralgia	Severe arthralgia, carpal tunnel syndrome and tendon friction rub
Interstitial lung disease	Mild and slowly progressive	Severe, early onset and rapid progression
Pulmonary hypertension	May occurs as an isolated complication, more frequent	Less frequent, occur in association with ILD
Renal crisis	Very rare	Occurs in 15% patients
Calcinosis cutis	Frequent and prominent	Mild and less common
Autoantibodies	Anti-centromere	Anti SCL 70(topoisomerase I)

86. Which of the following is the most common manifestation of systemic sclerosis other than skin involvement?
    - A. Esophageal dysmotility
    - B. Pulmonary fibrosis
    - C. [✓ Raynaud's phenomena]
    - D. Scleroderma renal crisis
    - E. Pulmonary hypertension

Ans: Raynaud's phenomena

Explanation: Raynaud's phenomena is the most common extracutaneous complications of systemic sclerosis. It is characterized by episode of reversible vasoconstriction in the fingers and toes. Nail fold capillaroscopy, where the skin capillaries at the nail bed are viewed under a microscope, is the best test for evaluation of Raynaud's phenomena. Primary Raynaud's disease is associated with normal capillaries that appear as regularly spaced parallel vascular loops, whereas in patients with Raynaud's associated with systemic sclerosis and other connective tissue disease, nailfold capillaries are distorted with widened and irregular loops, dilated lumens and areas of vascular dropout. Raynaud's phenomena is present in almost 99% of patients with systemic sclerosis followed by esophageal involvement which is present in 80-90% of patients.

87. Which of the following antibodies are associated with development of pulmonary arterial hypertension in patients with systemic sclerosis?
    - A. Topoisomerase I
    - B. RNA polymerase III
    - C. Anti-centromere antibodies
    - D. Anti-nuclear antibodies
    - E. Anti Ku antibodies

CREST

Ans: Anti centromere antibodies

Explanation: Anti centromere antibodies, anti U3-RNP and B23 are associated with development of pulmonary arterial hypertension in systemic sclerosis.

Autoantibodies and associated features in systemic sclerosis:

Antibody	SSc subset	Association
Topoisomerase I (Scl 70)	Diffuse SSc	Early ILD, tendon friction rub, renal crisis, cardiac involvement
Centromere antibodies	Limited SSc	Isolated PAH, calcinosis cutis, digital ischemia, renal crisis rare
RNA polymerase III	Diffuse SSc	Rapidly progressive skin involvement, joint contracture, GAVE, renal crisis
U3-RNP	Diffuse SSc	PAH, ILD, myositis
Th/TO	Limited SSc	ILD, PAH
Ku	Overlap Syndrome	SLE, myositis
U1-RNP	MCTD	PAH, arthritis, myositis
B23	Limited	PAH

88. Patients with history of systemic sclerosis die prematurely five to eight times to the general population. Which of the following is the most common cause of death in these patients?
    - A. Cardiovascular disease
    - [✓ B. Respiratory failure] ✓ Pul
    - C. Skin infections
    - D. Cancer
    - E. Renal crisis

Ans: Respiratory failure ✓

Explanation: The most common cause of death in systemic sclerosis is respiratory failure due to PAH and ILD. Previously it was renal crisis.

89. A patient with history of diffuse systemic sclerosis presented in emergency with headache, blurred vision and shortness of breath. She was started on oral prednisone for arthritis 1 week back. Examination showed blood pressure of 210/110 mmhg. Labs showed increased urea and creatinine. What is the best treatment for her?
   A. Labetalol infusion
   B. Nitroprusside infusion
   C. Oral captopril ✓
   D. IV nitroglycerin
   E. Pulse methylprednisolone

Ans: Oral captopril

Explanation: This patient with history of systemic sclerosis presented with acute renal crisis. She has taken steroids which is a risk factor for developing renal crisis in systemic sclerosis, this is the reason, that steroids are used in these patients only when absolutely needed in a dose < 10 mg/day. The treatment of choice in scleroderma renal crisis is oral captopril 25 mg 6 hrly with rapid normalization of blood pressure.

90. Which of the following is **not** a characteristic feature of mixed connective tissue disease?
   A. Raynaud's phenomena
   B. Elevated ESR
   C. Anti-centromere antibodies ✓
   D. U3-RNP Antibodies
   E. Good response to steroids

Ans: Anti centromere antibodies

Explanation: Patients who have limited cutaneous systemic sclerosis with features of SLE, polymyositis, dermatomyositis and RA have mixed connective tissue disease. The characteristics of MCTD are:

- High titers of U3-RNP antibodies
- Raynaud's phenomena, initial presentation
- Other features of lcSSc like calcinosis, sclerodactyly and telangiectasia.
- Features of SLE and dermatomyositis
- Erosive polyarthritis
- Elevated ESR and hypergammaglobulinemia
- Absence of disease specific antibodies of SLE, systemic sclerosis and RA
- Good response to steroids
- Better long term prognosis than systemic sclerosis

91. A 38 year old female presented with history of difficulty swallowing for 3 months. She told you that she is unable to rise from sitting, comb her hair and climb the stairs. Examination showed 4/5 muscle power in hip flexors and extensors and deltoid. There is also tenderness of proximal muscles. She is not taking any medications and has no history of any skin rash. What is the most probable diagnosis?
   A. Dermatomyositis
   B. Polymyositis

C. Inclusion body myositis
D. Myasthenia gravis
E. Polymyalgia rheumatica

Ans: Polymyositis

Explanation: Proximal myopathy with muscle tenderness and absence of skin rash in young patient with no extraocular muscle involvement suggests polymyositis as the cause. In dermatomyositis, skin rash is present. Inclusion body myositis presents after age 50. MG involves extraocular muscles and there is no tenderness. PMR presents after 50 and there is no muscle tenderness and dysphagia. Polymyositis is a disease of exclusion affecting adults who have subacute inflammatory myopathy and who have no;

- skin rash
- Involvement of extraocular and facial muscles
- Family history of neuromuscular disease
- History of exposure to myotoxic drug
- Endocrinopathy
- Neurogenic disease

92. Which of the following is best test to confirm the diagnosis of polymyositis?
A. CPK + aldolase
B. MRI of muscles
C. Anti Jo-1 antibodies
D. Electromyography
[✓ E. Muscle biopsy]

Ans: Muscle biopsy

Explanation: Muscle biopsy is the best diagnostic test for the confirmation of diagnosis of polymyositis and differentiation from other causes of proximal myopathy. CPK and serum aldolase are the best initial test for screening but these are non-specific. CPK is elevated almost 50 fold in active disease and level usually parallels disease activity. MRI may guide the location of muscle biopsy and not used for confirmation of diagnosis. Anti Jo-1 antibodies are present in 30% of patients with polymyositis and more in patients who have ILD associated with polymyositis. EMG is used to differentiate myopathy from neurogenic causes of weakness. Muscle biopsy is the most sensitive and specific test for establishing the diagnosis of inflammatory myopathy and for exclusion of other neuromuscular disease. Inflammation is the histological hallmark for inflammatory myopathies.

93. A 35 year old female presented with history of proximal muscles weakness is diagnosed as a case of polymyositis on muscle biopsy. Her CPK level is 24000. What should be the best initial treatment for her?
A. Methotrexate
B. Oral prednisone
C. Azathioprine
D. Mycophenolate
E. Cyclosporine

Ans: Oral prednisone

Explanation: High dose prednisone at 1mg/kg/day is the initial treatment of choice for both polymyositis and dermatomyositis. The goal of therapy is to improve muscle strength and not normalization of CK level. Azathioprine, mycophenolate or methotrexate is used as second line treatment when patient fails to respond steroids after a 3-month trial.

94. A 42 year old female presented with complaints of a progressive rash on her face which is getting worse for 3 months. She also told you that she is distressed as she is not able to comb her hair. Examination showed a flat red rash on the face and upper trunk and raised scaly eruptions on the knuckles of her hands. Proximal muscle power is 4/5. What is the most probable diagnosis?

A. Polymyositis
B. Inclusion body myositis
C. [✓ Dermatomyositis]
D. Systemic lupus erythematosus
E. Dermatomyositis sine myositis

Ans: Dermatomyositis

Explanation: Facial rash+ knuckles rash+ proximal myopathy=> dermatomyositis. In polymyositis, skin rash is absent. Inclusion body myositis is associated with weakness and atrophy of distal muscles predominantly. Typical skin rash of dermatomyositis with normal muscle strength is termed as dermatomyositis sine myositis.

Skin rashes and signs of dermatomyositis:

- Heliotrope rash: blue purple discoloration on the upper eyelids with edema
- Gottron's sign: Erythema of knuckles with a raised violaceous scaly eruptions
- V sign: Flat red rash on the anterior chest in the necklace area worsened with sun exposure
- Shawl sign: Flat red rash on the back and shoulders worsened with sun exposure
- Mechanic's hands: rough lateral and palmar areas of fingers with cracks and irregular dirty horizontal lines.
- Joint contractures in children

95. Which of the following is **not** a characteristic feature of dermatomyositis?

A. Subcutaneous calcifications
B. Dysphagia
C. [✓ Associated with malignancy]
D. Perifascicular atrophy and perifascicular infiltrates
E. Endomysial infiltrates with primary inflammation

Ans: Endomysial infiltrates with primary inflammation

Explanation: The term primary inflammation is used to indicate that the inflammation is not reactive and the T-cell infiltrates, located primarily within the muscle fascicles, surround individual, healthy muscle fibers. This primary inflammation and endomysial infiltrates are typical diagnostic hallmark of polymyositis. In dermatomyositis, the endomysial inflammation is predominantly perivascular and around rather than within the muscles fascicles. Dermatomyositis is also associated with perifascicular atrophy which is diagnostic of dermatomyositis even in the absence of inflammation. Patient with dermatomyositis are sometimes associated with subcutaneous calcifications causing ulceration and infections. Dysphagia and GI symptoms also occur in dermatomyositis due to involvement of oropharyngeal striated muscles. Patient with dermatomyositis are associated with malignancy in up to 15% of cases and in these patients, an active screening and surveillance for malignancy should be done. The most common tumors associated are ovarian cancer, breast cancer, melanoma, colon and non-Hodgkin's lymphoma. In Asians, nasopharyngeal cancer is common.

96. A 65 year old female with history of Ischemic heart disease presented with a 3 month history of bilateral shoulder aches and pains associated with stiffness in the morning for 3 hours. There is no history of headache, jaw claudication or visual disturbance. Labs showed high ESR with negative RA factor and normal CPK. What is the most likely diagnosis?
    - A. Giant cell arteritis
    - B. Polymyositis
    - C. Seronegative RA
    - D. Statin induced myopathy
    - E. Polymyalgia rheumatica PMR

Ans: Polymyalgia rheumatics

Explanation: Bilateral shoulder and hip pain associated with early morning stiffness with high ESR in a patient with age more than 50 years suggest polymyalgia rheumatica as the most probable diagnosis. Giant cell arteritis presents with headache, jaw claudication or visual loss. Polymyositis is associated with high CPK level, muscle weakness and tenderness.

97. A 61 year old female presented with bilateral shoulder and hip pains with stiffness in the morning for 6 months. Labs were done which showed ESR of 95mm/hr. What is the most appropriate next management step for her?
    - A. Naproxen 500 mg twice daily
    - [✓ B. Prednisone 20 mg once daily]
    - C. Prednisone 60 mg once daily
    - D. Physiotherapy
    - E. Methotrexate 10 mg weekly

Ans: Prednisone 20 mg once daily

Explanation: History with high ESR suggest PMR as the most probable diagnosis. A trial of steroids is the most appropriate next step in treatment and for confirmation of diagnosis. Patients with PMR respond to the steroids rapidly and diagnosis is confirmed by rapid resolution of symptoms with steroids. If the patient does not experience a dramatic improvement within 72 hours, the diagnosis should be revisited. A typical starting dose is 20 mg once daily with tapering of steroids over a 2 years period.

98. A 68 year old male presented with complaints of headache associated with pain in jaw muscles during eating for 2 months. He also told you that he felt pain on scalp during combing his hair. Labs were done which showed normocytic anemia with high ESR. What should be the next best management step?

A. Prednisone 20 mg and temporal artery biopsy within 2 weeks
B. Temporal artery biopsy and prednisone 20 mg after biopsy
C. Prednisone 60 mg and temporal artery biopsy within 2 weeks
D. Temporal artery biopsy and prednisone 60 mg after biopsy
E. IV pulsed methylprednisolone 1 g for 3 days and temporal artery biopsy within 2 weeks

Ans: Prednisone 60 mg and temporal artery biopsy within 2 weeks

Explanation: The classic "**above the neck**" symptoms of giant cell arteritis are headache, scalp tenderness, jaw claudication and visual symptoms. When a patient has any of the above signs and symptoms, therapy with prednisone 60 mg once daily orally should be initiated immediately and a temporal artery biopsy should be performed thereafter ideally within 2 weeks. Diagnostic findings of giant cell arteritis may still be present 2 weeks and even longer after starting steroids. IV pulsed methylprednisolone 1 g for 3 days is used when patient presents with acute visual loss.

99. A 21 year old female presented with low grade fever, weight loss and uncontrolled hypertension for 3 months. She also complains of pain in both upper limbs during writing or playing basketball. Examination showed bilateral absence of radial pulses and bruits over the subclavian arteries. ESR and CRP are high. What is the most probable diagnosis?
A. Polyarteritis nodosa
B. Thoracic outlet syndrome
C. Takayasu arteritis
D. Giant cell arteritis
E. Coarctation of aorta

Ans: Takayasu arteritis

Explanation: Takayasu arteritis also called pulseless disease typically affects female at the onset of adulthood. It presents with malaise, fever, weight loss, diminished pulses, and unequal blood pressure in the arms, limb claudication, hypertension and bruits over the arteries. ESR and CRP are elevated. Diagnosis established by CT or MR angiography. Treatment is Steroids.

Giant cell arteritis presents in old age. Coarctation of aorta does not cause raised ESR and CRP and constitutional symptoms. Polyarteritis nodosa presents with multi system involvement.

100. A 32 year old male presented with history of sudden onset of left foot drop. He has a history of difficult to treat asthma with frequent courses of steroids. Currently he is taking steroid + LABA inhaler, monteleukast and a fluticasone nasal spray for rhinitis. Labs were done which showed high eosinophil count. What is the most likely diagnosis?
A. Microscopic polyangitis
B. Granulomatosis with polyangitis
C. Churgg Strauss syndrome
D. Allergic bronchopulmonary aspergillosis
E. Polyarteritis nodosa

Ans: Churgg Strauss syndrome

Explanation: History of asthma, rhinitis and sinusitis, peripheral neuropathy with eosinophilia is typical for Churgg Strauss syndrome. It is an ANCA associated small- medium vessel vasculitis in which pANCA is positive in up to 60% of patients. Treatment is steroid+ cyclophosphamide.

101. A 36 year old male presented with history of pain in his oral cavity and in his groin region for 4 weeks. Examination showed multiple ulcers in his oral cavity and shallow ulcers within his groin region. He is taking warfarin for an unprovoked DVT of left leg for 2 months. Redness and a small pustule at the puncture site of needle prick develops, when blood is taken for investigation. What is the most probable diagnosis?

A. Disseminated gonococcal infection
B. Crohn disease
C. Behcets syndrome
D. Disseminated herpes simplex
E. Primary syphilis

Ans: Behcets syndrome

Explanation: Genital ulcers with oral ulceration and history of DVT with a positive Pathergy sign are typical of Behcets syndrome. Diagnostic criteria for Behcets syndrome includes:

Recurrent oral ulceration plus two of the following:

- Genital ulceration
- Eye lesions (uveitis)
- Skin lesions (erythema nodosum, pyoderma gangrenosum, sweet syndrome, folliculitis, acne like exanthem)
- Pathergy test (skin inflammatory reactivity to any scratches or intradermal injection).

Eye involvement=> most serious complication of Behcets syndrome=> cause blindness

Non deforming arthritis can occur in 50% of patients

DVT seen in 30% of patients

GI involvement can cause diarrhea.

Treatment:

- Topical steroids for oral ulceration
- Colchicine for erythema nodosum and arthritis
- Thalidomide for resistant oral and genital ulceration
- High dose steroids and cyclophosphamide for uveitis and neurological manifestation.

102. A 54 year old female presented with joint pain and intermittent purpuric rash for 8 months. She also complains of intermittent abdominal pain, malaise, fever, and weight loss. Examination showed a purpuric rash involving her calves and thighs. Labs were done which showed urea 56, creatinine 1.9, ESR 70 and negative RA factor and ANA. Urinalysis showed protein +, RBCs ++. C-ANCA and P-ANCA are positive. What is the most likely diagnosis?

A. Mixed cryglobulinemia
B. Wagner granulomatosis

C. Microscopic polyangitis
D. Churgg Strauss syndrome
E. Systemic lupus erythematosus

Ans: Microscopic polyangitis

Explanation: Wegener's granulomatosis (WG) and microscopic polyangiitis (MPA) are closely related systemic vasculitis. Both are associated with ANCA and are grouped as ANCA-associated vasculitis. ANCA directed against proteinase 3 (PR3) are more common in WG and those directed against myeloperoxidase (MPO) are associated with MPA. Involvement of the ears, nose, and throat such as granulomatous rhinitis is a common finding in WG and is observed in only a minority of patients with MPA. A sparing of upper respiratory tract is a differentiating feature of MPA from WG. Treatment is same as for WG with good response to steroids and immunosuppression than WG.

103. A 35 year old female presented with complaints of generalized body aches and pains associated with lethargy, non-refreshing sleep and feeling tired all the times for 6 months. Examination showed multiple tender points both above and below the abdomen. All the blood tests including screen for autoantibodies is negative. What is the most likely diagnosis?

A. Chronic regional pain syndrome
B. Major depressive disorder
C. Fibromyalgia
D. Chronic fatigue syndrome
E. Mixed connective tissue disorder

Ans: Fibromyalgia

Explanation: History of chronic widespread pain for > 3 months associated with lethargy, non-refreshing sleep and multiple tender points on palpation with normal results of investigation suggest a diagnosis of fibromyalgia. Diagnosis is clinical and refers to the ACR criteria which lists 9 pairs of tender points on the body. If a patient is tender in at least 11 of these 18 points, it makes a diagnosis of fibromyalgia more likely.

104. A 29 year old female with history of pain throughout the body with fatigue is diagnosed as having fibromyalgia when all the blood tests and auto antibodies screen came to be negative. Which of the following non-pharmacological treatment will be most effective for her?

A. Strength training
B. Balneotherapy
C. Aerobic exercise
D. Electrotherapy
E. Acupuncture

Ans: Aerobic exercise

Explanation: Aerobic exercise has the strongest evidence of benefit in patients with fibromyalgia. It improves wellbeing, aerobic capacity, tenderness and pain compared with no exercise. Strength training also shows some benefit but less than aerobic exercise. Balneotherapy (hot spa treatments), electrotherapy and acupuncture have short term benefits only.

105. A 65 year old male with a long standing history of DM presented with redness and swelling in right foot for 1 week, but he denies any pain in right foot. Examination showed a swollen, erythematous and warm right foot with loss of sensations up to ankle. There is no ulcer. Dorsalis pedis pulse is absent. X-ray of foot showed bone fragmentation involving midfoot. What is the most likely diagnosis?

A. Septic arthritis
B. Osteomyelitis
C. Charcoat joint
D. Chronic gout
E. Bone infarction

Ans: Charcoat joint

Explanation: The combination of painless, hot, swollen and erythematous foot with loss of sensations and fragmentation in a patient with poorly controlled DM is highly suggestive of Charcoat joint. A Charcoat joint is also called neuropathic joint. The neuropathy causes disruption of joints leading to destruction. Unlike septic arthritis, Charcot joints although swollen have normal temperature without elevated inflammatory markers. Importantly, they are painless. There are two types of Charcoat joints. Atrophic and hypertrophic.

Atrophic form:

- Occurs earlier
- Has an acute presentation
- most common form
- characterized by reabsorption of the ends of the affected bone
- joint destruction with resorption of fragments
- an absence of osteosclerosis and osteophytes
- mainly occurs in non-weight bearing joints of the upper limb

Hypertrophic form:

- only sensory nerves affected
- slow progression
- joint destruction with periarticular debris/bone fragmentation
- initially widened then narrowed joint space
- presence of osteosclerosis and osteophytes
- Absence of osteoporosis (unless joint is infected).

Causes of Charcoat joints:

- Diabetes=> affects ankle and foot. Most common cause
- Syringomyelia => most common cause in upper limb
- Tabes Dorsalis => affects knee, most common cause in the past
- Poliomyelitis
- Leprosy
- Multiple sclerosis

- Intraarticular steroids use
- Charcoat marrie tooth disease

106. A 45 year old male presented with complaints of recurrent abdominal pain associated with two episodes of bleeding per rectum. Colonoscopy was done which did not localize the bleeding source. CT angiography was done which showed pseudo aneurysms of superior mesenteric artery. Previous hospital record showed multiple visits for polyarthritis and three visits for testicular pain. Patient is also taking amlodipine and valsartan for hypertension and has work up for proteinuria and hematuria which showed raised ESR and negative auto antibodies screen. Which of the following can be the most probable diagnosis?

A. Henoch-Schonlein purpura
B. Systemic lupus erythematous
C. Microscopic polyangitis
D. Polyarteritis nodosa
E. Good Pasture syndrome

Ans: Polyarteritis nodosa

Explanation: Multisystem involvement with negative autoantibodies screen and pseudo aneurysms on angiography is suggestive of polyarteritis nodosa as the most probable diagnosis in this patient. PAN is a multisystem vasculitis syndrome characterized by fibrinoid necrosis and leucocyte infiltration of the walls of medium-sized and small-sized arteries. At presentation, the disease may have variable organ involvement, including kidneys, skin, GI tract, heart, peripheral nerves, genitals or muscles, and thus the presenting symptoms vary. PAN typically presents as abdominal, testicular or muscular pain and systemic symptoms such as fever, malaise or unintentional weight loss. The symptoms appear gradually and the disease has an insidious course for a prolonged period of time.

ACR criteria for the diagnosis of PAN:

- Weight loss of 4 kg or more
- Livedo reticularis
- Testicular pain/tenderness
- Myalgia or leg weakness/tenderness
- Mononeuropathy or polyneuropathy
- Diastolic blood pressure greater than 90 mm/Hg
- Elevated blood urea nitrogen (BUN) or creatinine level unrelated to dehydration or obstruction
- Presence of hepatitis B surface antigen or antibody in serum
- Arteriogram demonstrating aneurysms or occlusions of the visceral arteries
- Presence of polymorphonuclear neutrophils in a biopsy specimen from a small- or medium-sized artery.

At least 3 of the 10 ACR criteria should be present when a radiographic or pathological diagnosis of vasculitis is made.

107. A 36 year old male presented with hematuria associated with joints pain for 2 weeks. Labs showed high urea and creatinine with urinalysis showing RBCs +++ and protein +. He has a long-standing history of chronic sinusitis and has a history of septoplasty for a depressed nose bridge. Chest X-RAY showed bilateral peripheral nodules. What is the most probable diagnosis?

A. Churgg Strauss syndrome
B. Relapsing polychondritis
C. Good pasture syndrome
D. Wagner's granulomatosis
E. Polyarteritis nodosa

Ans: Wagner's granulomatosis

Explanation: Upper airways involvement+ saddle nose deformity+ lung involvement + kidney involvement => Wagner's granulomatosis (granulomatosis with polyangitis).

Churgg Strauss is associated with asthma, sinusitis, neuropathy, with eosinophilia.

Good pasture is hematuria with Hemoptysis

Relapsing polychondritis is recurrent episodes of redness and pain in cartilage of earlobes, upper airways with saddle nose. No involvement of kidney and lung parenchyma.

Polyarteritis nodosa spares respiratory tract.

108. Which of the following autoantibodies is typically associated with Wagner's granulomatosis?

A. MPO-ANCA
B. PR3-ANCA ✓
C. P-ANCA
D. Anti GBM
E. Anti Jo-1

3-30 0.5 20/125
30 50
70 100
25

Ans: PR3-ANCA

Explanation: Wagner's granulomatosis is predominantly associated with ANCA directed against proteinase 3 (PR3), while microscopic polyangitis is predominantly associated with myeloperoxidase (MPO)–ANCA. P- ANCA is classically associated with Churgg Strauss syndrome. Anti GBM antibody is associated with Good pasture syndrome. Anti Jo-1 is associated with polymyositis causing ILD.

109. Which of the following is the treatment of choice for the management of Wagner's granulomatosis?

A. Oral prednisone
B. Oral cyclophosphamide
C. IV Rituximab
D. Prednisone+ cyclophosphamide ✓
E. Prednisone+ methotrexate

Ans: Prednisone+ cyclophosphamide

Explanation: High dose steroids with oral cyclophosphamide is the treatment of choice. High dose steroids + rituximab can also be used as an alternative to cyclophosphamide. Methotrexate is used as maintenance therapy with low dose steroids.

110. A 14 year old boy presented with history of fever and feeling unwell for 1 week. On examination patient has bilateral conjunctivitis, cervical lymphadenopathy, erythema and desquamation of hands and feet. His lips appear red and dry with a strawberry colored tongue. What treatment should be given to him?

A. Amoxicillin
B. Diclofenac
C. Prednisone oral
D. IV methylprednisolone
E. Aspirin+ IVIG

K

As

Ans: Aspirin + IVIG

Explanation: The most likely diagnosis here is Kawasaki disease. This can affect the CVS and other systems. Aspirin and IVIG used in combination lead to a lower incidence of mortality and coronary artery complications. This treatment should be started as soon as possible. Kawasaki and rheumatic fever are the only two Indications of aspirin use in pediatric age group.

Criteria for the clinical diagnosis of Kawasaki syndrome:

Fever persisting at least 5 days and the presence of at least 4 of the following 5 principal features:

- Changes in extremities: Acute: Erythema and edema of hands and feet Convalescent: Membranous desquamation of fingertips
- Polymorphous exanthema
- Bilateral, painless bulbar conjunctival injection without exudate
- Changes in lips and oral cavity: Erythema and cracking of lips, strawberry tongue, diffuse injection of oral and pharyngeal mucosae
- Cervical lymphadenopathy (≥1.5 cm in diameter), usually unilateral

Patients with fever and fewer than 4 principal symptoms can be diagnosed as having Kawasaki disease when coronary artery disease is detected by 2-dimensional echocardiography or coronary angiography. Other diagnoses should be excluded.

111. A 22 year old male presented with pain and swelling in his ankles, knees and wrist for 5 days. He also complains of crampy abdominal pain. Examination showed tenderness in effected joints and a purpuric rash on his buttocks and upper thighs. Urine dipstick showed microscopic hematuria. What is the most likely diagnosis?

A. Hemolytic uremic syndrome
B. Good pasture syndrome
C. Wagner's granulomatosis
D. Henoch-Schonlein purpura
E. Systemic lupus erythematous

Ans: Henoch-Schonlein purpura

Explanation: The features described are characteristics of HSP. The most common presenting features are characteristics purpuric rash on buttocks, abdominal pain, joint pain, microscopic hematuria and proteinuria. It is a type of leukocytoclastic vasculitis and commonly affects children and young adults.

112. A 45 year old female with history of RA presented with sudden onset of swelling and decrease range of motion at the right knee joint. She also complains of fever and malaise. Examination showed a hot and tender right knee with normal examination of other joints of the body. What should be the next best management step?
    - A. Intraarticular triamcinolone
    - B. X-ray of knee joint
    - C. Joint aspiration with gram stain
    - D. IV antibiotics
    - E. RA factor and ESR

Ans: Joint Aspiration and gram stain

Explanation: This patient with history of RA presented with acute monoarthritis with normal examination of other joints of the body. Patient is also febrile. Rheumatoid arthritis is a risk factor for developing septic arthritis. The best initial management is joint aspiration with microscopy, gram stain and culture and antibiotics after aspiration.

113. Which of the following is the most common cause of non gonococcal septic arthritis in adults?
    - A. Staphylococcus epidermidis
    - B. Staphylococcus aureus
    - C. Streptococcus pneumoniae
    - D. Salmonella species
    - E. Pseudomonas aeruginosa

②

Ans: Staphylococcus aureus

Explanation: Staphylococcus aureus is the most common cause of septic arthritis in adults. S. Epidermidis causes septic arthritis in prosthetic joints. P. Aeruginosa arthritis is associated with penetration of a sharp object through a shoe and arthritis of foot.

114. A 32 year old male presented with complaints of pain and swelling in left knee joint for 2 days. He told you that he has similar problem in his right ankle 4 days back which is normal now. Examination showed tender knee joint and hemorrhagic pustules on the extensor surfaces of the fingers. What is the most likely diagnosis?
    - A. Nongonococcal arthritis
    - B. Gonococcal arthritis
    - C. Rheumatic arthritis
    - D. Lyme arthritis
    - E. Reactive arthritis

Ans: Gonococcal arthritis

Explanation: History of migratory arthritis with hemorrhagic pustules in a young patient is due to gonococcal arthritis which is accounted for 70% of cases of septic arthritis in young with age < 40. Treatment is ceftriaxone IV or IM 1 g for 7 days with ciprofloxacin oral.

115. A 27 year old female presents with an acutely swollen left knee. In the last week, she was unwell with fever and myalgia and she noticed small pustular lesions on her distal forearms and hands. She then had pain in her left wrist and dorsum of wrist and hand, then left elbow and right knee. These pains settled but her left knee remained swollen and painful. She recently had unprotected sex. Gram stain of joint aspirate reveals gram negative diplococci. What should be the treatment of choice for her?

A. Azithromycin oral 1g stat
21 → B. Doxycycline 100 mg twice daily
C. High dose aspirin
D. Ceftriaxone IV 1g
14 E. Intraarticular triamcinolone

Ans: Ceftriaxone IV 1g

Explanation: Migratory arthritis with typical skin lesions in a young sexually active female is gonococcal arthritis. The treatment of choice is ceftriaxone IV 1g for 1 week.

116. Which of the following is the most common cause of acute osteomyelitis?

A. Staphylococcus aureus
B. Staphylococcus epidermidis
C. Streptococcus species
D. E. Coli
E. Pseudomonas aeruginosa

Ans: Staphylococcus aureus

Explanation: Acute osteomyelitis is caused by s. Aureus in 40-50%, 12% by streptococci, 9% by E. Coli and 6% by P. Aeruginosa.

117. Which of the following is the most common location of tuberculous osteomyelitis?

A. Cervical vertebrae
B. Thoracic vertebra
C. Lumber vertebra
D. Sacral vertebra
E. Skull bones

Ans: Thoracic vertebra

Explanation: Thoracic vertebra are the most common site for the involvement of tuberculous osteomyelitis followed by lumber vertebra. This is in contrast to the other causes of vertebral osteomyelitis in which lumber vertebra are affected more commonly than thoracic vertebra.

118. A 15 year boy presented with pain and redness in right lower leg. He is a diagnosed case of sickle cell disease. MRI of the leg showed bone marrow edema and changes of acute osteomyelitis of right tibia. Which organism is responsible for osteomyelitis in this patient?

A. Staphylococcus aureus
B. Staphylococcus epidermidis
C. Salmonella
D. Pseudomonas aeruginosa
E. E. Coli

Ans: Salmonella

Explanation: Cause of osteomyelitis in sickle cell disease is salmonella.

119. A 35 year old male who has recently started to train for a marathon presents with left hip pain. This is over the lateral side of his hip and radiates down the thigh and is worse at night time when he lies on left side. Pain is reproduced by adduction of the femur. What is the most likely diagnosis?

A. Osteoarthritis
B. Avascular necrosis
C. Trochanteric bursitis
D. Hip fracture
E. Hip dislocation

1.8-2.8

7.5

3

<2.5

Ans: Trochanteric bursitis

Explanation: Trochanteric bursitis is a common disorder and frequent cause of lateral hip pain. The trochanteric bursa is located on the lateral aspect of the hip, lying superficial to the hip abductor musculature and deep to the iliotibial band. Due to its superficial position and proximity to large tendons, the trochanteric bursa can become inflamed. Inflammation to the bursa can be due to repetitive micro traumas such as running or exercise, tendinopathy of surrounding musculature, gross trauma including fall from a height with direct compression to the bursa, or inflammation can be idiopathic without a discernable cause. Diagnosis is clinical and based primarily on history and physical examination. Physical examination is the gold standard for the diagnosis of trochanteric bursitis. It is important to rule out a hip fracture on clinical physical examination. Patients should maintain their ability to straight leg raise without pain, and log roll (internal and external rotation of the leg at the hip joint with the hip flexed to 90 degrees) will also not elicit pain in the hip joint. Patients will have localized pain with deep palpation over the greater trochanter on the lateral aspect of the proximal femur. Pain often worsens with prolonged activity, or maneuvers involving stabilization of pelvis such as standing on one leg. Examination of the skin is often normal, without erythema or increased warmth as etiology is non-infectious. Pain is often elicited with adduction of the femur and relieved with abduction as this tensions and relieves tension on the overlying iliotibial band, respectively.

120. A 79 year old woman falls over on to an outstretched hand and sustains a Colles fracture. She has no other medical history and takes occasional paracetamol for headache on and off. What is the most appropriate next course of action regarding her risk of having a fracture in future?

A. Arrange DEXA scan
B. Start alendronate once weekly
C. Calcium and vitamin D
D. Work up for myeloma
E. No further action needed

75

2

Ans: Start alendronate once weekly

Explanation: Start bisphosphonate in patients >= 75 years following a fragility fracture without waiting for DEXA scan. These patients are presumed to have underlying osteoporosis and should be started on 1st line therapy without DEXA scan. Bisphosphonate therapy is also indicated for patients with a pathological spine fracture or low impact hip fracture, a for patients with osteoporosis which is defined as a T score of -2.5 or less in the spine, total hip or femoral neck. They are also indicated for patients with T score between -2.5 to -1.5 and a 10 year hip fracture risk > 3%. Calcium and vitamin D should be repleted but these do not reduce fracture risk.

121. A 55 year old female presented with complaints of low back pain for 6 months. Patient has family history of low impact hip fracture. Calcium and phosphate are normal. Alkaline phosphatase is also normal. DXA scan showed a T score of -2.8. What is the best treatment for her?

A. Calcium supplements
B. Calcium and vitamin D
C. Alendronate once weekly
D. Calcitonin S/C
E. Physiotherapy

Hsp

Ans: Alendronate once weekly

Explanation: T score less than -2.5 is an indication for bisphosphonate therapy.

122. Which of the following member of bisphosphonate group does not reduce the risk of non-vertebral fractures?

A. Alendronate
B. Risedronate
C. Ibandronate
D. Pamidronate
E. Zolendronate

IV Ep

Ans: Ibandronate

Explanation: Alendronate and Risedronate reduce the risk of both vertebral and nonvertebral fracture risk whereas Ibandronate only reduces the risk of vertebra fracture. The best agent for reducing the risk of nonvertebral fracture is alendronate.

123. A 68 year old female with history of osteoporosis was started on alendronate but has developed severe dyspepsia with its use. What should be the next best step for her?

A. Change to Risedronate
B. Calcitonin
C. Strontium chloride
D. Raloxifene
E. Teriparatide

Ans: Raloxifene

Explanation: Patients who cannot tolerate bisphosphonate due to side effects, dyspepsia being the most common, raloxifene can be used for reducing the risk of osteoporosis. It reduces the risk of vertebral fracture up to 40%.

124. A 63 year old female is started on raloxifene 60 mg once daily for osteoporosis. The patient should be warned about the risk of which important side effect?
    - A. Risk of vertebral fracture
    - B. Osteonecrosis of jaw
    - C. Increase risk of breast cancer
    - D. Increased risk of thromboembolism ✓
    - E. Increased risk of endometrial cancer

Ans: Increased risk of thromboembolism

Explanation: Raloxifene increases the risk of thromboembolism and patient should be warned about this important side effect and this drug should be avoided in patients with history of thromboembolism. Raloxifene reduces the risk of vertebral fracture. Osteonecrosis of jaw is a rare side effect of bisphosphonate. The risk of breast cancer is reduced by 75% in women taking raloxifene. Raloxifene does not increase the risk of endometrial cancer unlike estrogen.

125. A 69 year old male presented with complaints of pain in lower back and hip region for 2 years not getting better with traditional pain killers. Examination showed bowed legs and a hearing device is also seen which was inserted 6 months ago. Labs were done which showed normal calcium, phosphate and vitamin D level with a very high alkaline phosphatase level. What is the most likely diagnosis?
    - A. Osteoporosis
    - B. Osteoarthritis of hip
    - C. Osteomalacia
    - D. Paget disease of bone
    - E. Osteosarcoma

CAMP

[illegible]

Ans: Paget disease of bone

Explanation: Bone pain with deformed extremities associated with hearing loss and high alkaline phosphatase in an elderly patient is suggestive of Paget disease of bone. Osteoporosis does not cause elevation of alkaline phosphatase and osteomalacia causes low calcium and low phosphate and high alkaline phosphatase. Bone pain is the most common symptom of Paget disease followed by pathological fracture, hearing loss, increased risk of bleeding during orthopedic surgery due to increased vascularity and bowing of legs. Paget disease also increased the risk of high output cardiac failure and osteosarcoma.

126. A 74 year old male with history of deafness, low back pain and bowing of legs has high alkaline phosphatase level with normal calcium and phosphate. Which of the following should be the best next investigation for further workup of this patient?
    - A. Skeletal survey by X-rays
    - B. Radionuclide bone scans ✓
    - C. MRI of whole body
    - D. CT scan of long bones

E. Urinary hydroxyproline

Ans: Skeletal survey by X-rays

Explanation: The clinical history and high level of alkaline phosphatase suggests the diagnosis of Paget disease of bone. Targeted plain radiographs of the abdomen, tibias, skull, and facial bones are recommended as an initial diagnostic screening test in patients suspected to have Paget disease on biochemical or clinical grounds. Radionuclide bone scans are recommended in addition to targeted radiographs. (If option is radiographs+ bone scans, it is best than either of them alone). CT and MRI are used to assess the complications of Paget disease. Hydroxyproline is used when there is high suspicion of Paget disease but ALP is normal.

X-ray findings in Paget disease:

- Osteolytic bone lesions
- Cortical thickening
- Loss of distinction between cortex and medulla
- Trabecular thickening
- Osteosclerosis
- Bone expansion
- Bone deformity

N.B. No single finding is diagnostic, combination of the above findings is diagnostic.

127. A 70 year old male is diagnosed as a case of Paget disease of bone. He complains of low back pain, hip pain and pain in skull bones. What is the drug of 1st choice for this patient?

A. Pamidronate 90 mg IV
[✓ B. Zolendronic acid 5 mg IV]
C. Risedronate 30 mg oral
D. Alendronate 40 mg oral
E. Calcitonin S/C

Ans: Zolendronic acid 5 mg IV

Explanation: 5 mg dose of IV Zolendronic acid is the treatment of 1st choice for the treatment of Paget disease. This single infusion is sufficient for 5 years. Alendronate 40mg/day for 6 months and Risedronate 30 mg/ day for 2 months are alternative when Zolendronic acid is contraindicated. Retreatment is required between 1 to 5 years later in these cases. Calcitonin may be considered for the short term treatment of bone pain where bisphosphonate are contraindicated.

128. A 25 years old male presented with low back pain after lifting heavy weight 3 days back. Ain is worsened with bending forward and non radiating. Which of the following is the best next management step for him?

A. MRI spine
B. X ray lumbosacral spine

C. Painkiller + physical therapy
D. Acupuncture
E. Neurosurgical review

Ans: Painkiller + physical therapy

Explanation: This patient presents with mechanical low back pain and following are the recommendations for the management of mechanical low back pain;

- Advise patients to stay active and continue ordinary activity within the limits permitted by pain, avoid bed rest, and return to work early, which is associated with less disability.
- Recommend acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) if medication is necessary. COX-2 inhibitors, muscle relaxants, and opiate analgesics have not been shown to be more effective than NSAIDs for acute low back pain.
- Recommend acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) if medication is necessary. COX-2 inhibitors, muscle relaxants, and opiate analgesics have not been shown to be more effective than NSAIDs for acute low back pain.
- Reassure patients that 90% of episodes resolve within 6 weeks-regardless of treatment. Advise patients that minor flares-ups may occur in the subsequent year.
- Consider a plain lumbosacral spine x-ray if there is suspicion of spinal fracture or compression. Consider a bone scan after 10 days, if fracture is still suspected or the patient has multiple sites of pain.
- Suspect cauda equina syndrome or severe or progressive neurological deficit if red flags are present. These "red flags" include a history of trauma, fever, incontinence, unexplained weight loss, a cancer history, long-term steroid use, parenteral drug abuse, and intense localized pain and an inability to get into a comfortable position.
- Refer for goal-directed manual physical therapy.
- Do not refer for surgery in the absence of red flags.

129. A 32 year old male presented with pain, swelling and color changes in his right hand and right arm on and off for 2 months. He has a history of injury to his right hand while playing basketball 6 months back. There is no findings on physical examination except slight restrictions at right shoulder joint. What is the most probable diagnosis?

Neumatis
hello

A. Raynaud's phenomenon
B. Venous insufficiency
C. Arterial insufficiency
D. Sympathetic dystrophy
E. Thoracic outlet obstruction

Ans: Sympathetic dystrophy

Explanation: Complex regional pain syndrome (sympathetic dystrophy) a broad term describing excess and prolonged pain and inflammation that follows an injury to an arm or leg. CRPS has acute (recent, short-term) and chronic (lasting greater than six months) forms. CRPS used to be known as reflex sympathetic dystrophy (RSD) and causalgia. People with CRPS have changing combinations of spontaneous pain or excess pain that is much greater than normal following something as mild as a touch. Other symptoms include changes in skin color, temperature, and/or swelling on the arm or leg below the site of injury. Although CRPS improves over time, eventually going away in most people, the rare severe or prolonged cases are profoundly disabling. Any extremity can be involved, but the syndrome most commonly occurs in the hand and is associated with ipsilateral restriction of shoulder motion known as shoulder hand syndrome. This syndrome proceeds through phases: pain, swelling, and skin colour and temperature changes develop early and, if untreated, lead to atrophy and dystrophy. There are no systemic symptoms. In the early phases of this syndrome, bone scans are sensitive, showing diffuse increased uptake in the affected extremity. In the post-traumatic variant, this is known as Sudeck atrophy.

Mild cases=> NSAIDs

Severe cases associated with edema=> Prednisone for 4 weeks tapered

Physical therapy for restoration of function

50,
50,000